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THE PROGNOSIS OF INFECTIVE HEPATITIS

A PRELIMINARY ACCOUNT OF A LONG-TERM FOLLOW-UP*

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It is generally agreed that the great majority of patients who suffer from acute infective hepatitis make a complete recovery with no lasting damage to the liver. The condition may, however, relapse or recur; in a small proportion of patients serious destruction of liver parenchyma occurs, resulting in acute or subacute hepatic necrosis, and, although the importance of uncomplicated infective hepatitis in the aetiology of portal cirrhosis is not clear, this must be considered as a possible long-term sequel to the acute attack. Even in the absence of such gross complications, return to perfect health is often delayed, while in a few patients symptoms may persist for long periods of time.

In considering these accepted facts it seemed that a long-term follow-up of a large sample of men who had suffered from infective hepatitis with jaundice in one of the four massive outbreaks of the disease which ravaged the armies massed around the Mediterranean shores in the second world war would provide a unique opportunity for assessing the morbidity and mortality of the acute attack and the incidence, character, and duration of subsequent ill-health, immediate and delayed, which sometimes followed. The first of these epidemics, which occurred in the autumn of 1942 among the land forces of the British Army at about the time of the Battle of El Alamein, was chosen, because one of us (E. R. C.) had had personal experience of it.

The Initial Inquiry

In the year 1949, with the co-operation of the War Office and the then consulting physician to the Army, Brigadier J. Bennett, and of the Ministry of Pensions, the medical records of a random sample of one of every five men who had had infective hepatitis in this epidemic seven years previously, from July 1, 1942, to June 30, 1943, were studied. The vast majority referred to the second half of 1942, which was when the epidemic was at its peak. The sample numbered 1,465. From these were removed 78 who had been killed in action, four who had died at the time of the acute attack, six who had died from other causes, 60 who had had previous arsenical injections for the treatment of syphilis (and who might therefore have been suffering from inoculation hepatitis) or in whom there was doubt about the diagnosis, and 24 who were completely untraceable.

A personal letter containing a questionary was then written, and forwarded by Army Records Departments to each of the remaining 1,293 men. The questionary was a simple one, and asked whether the man had felt 100% fit immediately after leaving hospital, and, if not, in what way and for how long. It also asked whether he had had any further attack of jaundice. We had 1,052 (81.4%) replies, 1,030 of which were satisfactory.

Clinical Features

85% of the men were between the ages of 18 and 30 years, and all were, of course, superbly fit. The disease ran its expected course, the onset being frequently preceded by an initial period of illness, characterized by anorexia, malaise, and sometimes fever and enlargement of the liver. A few days later the urine was seen to be dark and the patient jaundiced. Soon the appetite returned, followed by a sense of reasonable well-being. Then the urine became free from bile pigments and jaundice began to clear.

Approximately 70% were in hospital between 6 and 25 days, while 60% of these were in from 11 to 20 days. Only 3.1% spent more than 50 days in hospital. Most of the men were transferred to a convalescent depot before returning to duty.

It is interesting that of the original sample of 1,465 men, 221 were officers and 1,244 were other ranks, a ratio of 1 to 5.6. This high number of officers bears out the observation that infective hepatitis as it occurred during the war around the Mediterranean Sea had a curious predilection for British Army officers. In this epidemic they were about 4½ times more likely than other ranks to develop the disease. Thus, the relative proportion of officers and other ranks affected in the Ninth Army was 4.6 to 1 (Cullinan, 1943), and in eleven regiments of the Eighth Army 4.7 to 1 (Spooner, 1944).

A second interesting feature of this epidemic was that it followed the forefront of battle. The brunt fell on the Eighth Army, which was in the Western Desert up to El Alamein, and heaviest of all on its front-line troops (Spooner, 1943). Thirdly, the gravity of the epidemic lay not so much in the numbers of men affected as in the length of time they were off duty. During the six winter months of 1942–3 infective hepatitis cost the British troops in the Middle East over half a million man-days in hospital.

Mortality

Among the 1,405 accepted cases of infective hepatitis (60 excluded because of syphilis or diagnosis in doubt) only 4 deaths occurred during the acute attack—a mortality of 0.28%. One officer and three other ranks, all in their

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twenties, died of acute hepatic necrosis 2, 6, 12, and 28 days respectively after the onset of symptoms.

Recurrence

It is well known that some patients have a recrudescence of symptoms while still in hospital. One observer put it as high as 15% (Wilson, 1944). The figure in the present sample cannot be given. However, 85 (8.3%) of the patients (15 officers, 70 other ranks) had a recurrence of infective hepatitis after leaving hospital at times varying from weeks to years (Table I). This high recurrence rate bears out our belief that one attack of infective hepatitis does not necessarily confer immunity from further attacks.

TABLE I

Time of Recurrence	No. of Cases
Within 4 weeks	17
2–6 months (inclusive)	7
7–12 ,, ,,	12
2–3 years	11
4–6 ,, ,,	15
Unstated	16

Symptoms Following the Acute Attack

It will be seen from Table II that approximately 26% felt 100% fit immediately after leaving hospital, 68% at the end of one month, 87% at the end of three months, and 95% at the end of one year.

TABLE II.—*Duration of Symptoms Following Discharge from Hospital*

	No.
Felt 100% fit on leaving hospital	265
,, ,, ,, up to 1 month after leaving hospital	432
,, ,, ,, ,, ,, 2 months ,, ,,	140
,, ,, ,, ,, ,, 3 ,, ,, ,,	64
,, ,, ,, ,, ,, 6 ,, ,, ,,	52
,, ,, ,, ,, ,, 1 year ,, ,,	21
,, ,, ,, over 1 ,, ,, ,,	11
Never felt well since leaving hospital	33
Uncertain	12

TABLE III

Malaise		Digestive Disturbances	
Weakness	254	Indigestion (bilious, bloated, heartburn, and so on)	170
Tired or easily fatigued	214	Impaired appetite	119
Lassitude and lack of energy	156	Dislike of fatty foods	99
Listless, lethargy, lack of interest or desire to act	117	Nausea and sometimes vomiting	60
Depression or despondency	72	Intolerance to alcohol	20
Run down or unwell	63		
Bodily aches and pains	56		

The total number of complaints described by the 765 men who had not felt 100% fit after leaving hospital was 1,691. The general pattern was one of malaise and digestive disturbance. The main complaints are shown in Table III. Some complaints were less frequent than might have been expected, such as further loss of weight (29), alteration of bowel habit (35), and persistent dark urine or yellow eyes (25).

Prolonged Symptoms

Seven years after the acute attack 33 (3.2%) of the men stated that they had never felt 100% fit since the acute illness. Five of these had suffered a second attack from six months to six years after the first. Of those who had never felt well, 10 were officers and 23 other ranks. Their complaints are summarized, in order of frequency, as follows: periodic slight jaundice, 9; feeling of impending recurrence, 6; persistent lassitude, 6; intolerance to cooked fats, 5; repeated "bilious" attacks, 5; loss of appetite and nausea, 4; depression, 3; "never felt well," 3; "indigestion," 2; periodic discomfort over the liver, 2; intolerance to alcohol, 1; periodic vomiting, 1; "stomach never the same," 1.

These complaints dated only from the attack of infective hepatitis; in some they were slight and vague, whereas others undoubtedly had the so-called post-hepatitis syndrome. It is, of course, just possible that the nine who complained of periodic slight jaundice—"My friends often say, 'You have jaundice,' and I go real yellow," or, "Even now I still get a twinge in the same place and my eyes have a pale yellowish tint"—had continuing liver damage or subacute necrosis. If this was so the condition must have been very mild, as is borne out later in this report. However, it is fruitless to analyse this group of 33 men further without having seen them, and it is intended that it shall be the subject of a further study. Here the important point to notice is the smallness of the group, which constitutes only 3.2% of the total replies, showing how the vast majority of men ultimately felt 100% fit after the acute attack.

The Question of Cirrhosis

It is known that some cases of infective hepatitis may progress to the stage of long-standing subacute necrosis of the liver with persistent or recurrent jaundice and that this in turn may finally result in the development of a condition indistinguishable pathologically from portal cirrhosis. Furthermore, it has been suspected that some patients with uncomplicated acute infective hepatitis may develop, years later, typical portal cirrhosis without any symptoms in the intervening years to suggest continued activity of liver disease.

In order to obtain an overall picture, and in an attempt to discover the incidence of such late developing complications, the follow-up was reopened in 1956. A further 132 men have now been traced, making a total of 1,184, or 91.6% of the original sample.

Three more deaths as a result of accident and one from myocardial infarction were discovered (giving a total of 10 deaths from unrelated conditions and four from the acute episode of hepatitis at the time of the attack), but we have so far found no subsequent deaths as a result of chronic liver disease.

A study of the hospital records revealed no instances of subacute necrosis progressing to portal cirrhosis, but it seemed possible in 1949 that the nine men who had complained of periodic slight jaundice ever since their acute attack might be suffering from long-standing mild subacute necrosis of the liver. However, the small group of 33 men who complained in 1949 that they had never felt well after the initial illness were written to again in 1957 (15 years after the original attack). Not all have yet replied, but eight of the nine who had complained of continuing jaundice now state that they feel 100% fit, and only one of these men reports occasional slight yellowness, which makes it extremely unlikely that they have progressed to portal cirrhosis.

It is conceivable that some of the 1,052 men contacted in 1949 (most of whom have not yet been written to again) have since developed cirrhosis, or that there are examples in the 109 men it has not yet been possible to contact, but we have good reason to suppose that such is not the case.

The development of cirrhosis in an ex-Service man who had suffered from infective hepatitis during war service would constitute entitlement to a pension, while if the severity of the disease was sufficient to cause symptoms there is little doubt that under the present conditions of the Welfare State application for a pension would be made. With the assistance of Dr. H. B. F. Dixon, of the Ministry of Pensions, we have been able to study the records of all men with cirrhosis to whom entitlement has been granted between September 3, 1939, and September 30, 1957. In spite of the fact that an estimated 95,000 cases of infective hepatitis occurred among British troops during the second world war (Medical Statistical Branch of the War Office, 1958), the number of men pensioned for cirrhosis amounts to only 76. As a result of a preliminary survey it appears that in only four instances was it possible that a single episode of uncomplicated infective hepatitis was followed years later by typical portal cirrhosis. None of the 1,293 men concerned in our follow-up have been pensioned for cirrhosis, and, although this does not prove that they have not developed it, we feel that it provides strong corroborative evidence that none have, in fact, done so. The follow-up continues.

Summary

A preliminary account is given of a long-term follow-up of 1,293 cases of infective hepatitis which occurred

among British Forces in the Middle East in the second world war. So far 91.6% of the men have been contacted.

The mortality rate of the acute attack was 0.28%, while the recurrence rate over the succeeding six years was 8.3%.

The clinical features of the acute attack are briefly discussed and an account is given of the symptoms which complicated recovery.

In only 3.2% of cases did subsequent ill-health last as long as seven years.

No examples of subacute necrosis leading to cirrhosis occurred in this series, and to date no cases of later developing cirrhosis have been discovered.

A follow-up of this size was made possible only by the co-operation of many people. In particular, we wish to mention successive Directors-General of the Army Medical Services and the consultant physicians to the Army, the Statistical Branch of the Army Medical Department, many Army records offices, the Ministry of Pensions, the Registrar-General for England and Wales, the Registrar-General for Scotland, the National Health Service Central Register Headquarters and Local Executive Councils, a large number of general practitioners, and the patients who wrote to us. We thank these and many others for their generous help. The secretarial expenses of the first part of the inquiry in 1949 were paid for by the Medical Research Council. One of us (R. C. K.) held the Cooper and Coventson Research Scholarship, St. Bartholomew's Hospital. We also thank Mrs. Bartholomew, Miss Benson, Miss Knottenbelt, and Miss McCleland for their valuable secretarial help.

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A FACTUAL STUDY OF MALE HOMOSEXUALITY

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In 1948 the Home Office granted us permission to study some of the problems of homosexuality in prisoners at the open prison at Leyhill and at Horfield Prison, Bristol. The prisoners consented and were promised complete anonymity. Since some were serving long sentences we decided not to publish any results until some time after after all were released.

Homosexual tendencies are widespread in the ordinary population, but for many reasons it is impossible to ascertain their frequency and intensity or the many circumstances involved. Homosexuality can be defined only in a general way, and is often, and erroneously, regarded as identical with homosexual behaviour punishable by law. Since the latter results from strong homosexual tendencies it is among habitual homosexual offenders that the most pronounced forms of homosexuality are often to be found.

Leyhill, an open prison without bars, receives prisoners serving from three years upwards whose behaviour is good. Among them are some selected persistent homosexual offenders. Most are of good intelligence whose only connexion with the world of crime has been through homosexual practices. These subjects were ideal for study, as they were free from serious psychopathy yet unable to resist homosexual urges. Our case material was 64 men (56 at Leyhill and 8 at Horfield) aged from 20 to 61, average 40.5 years: 43 had no previous convictions; 8 had one conviction for homosexual offences, 1 had two, and 1 had several; 9 had convictions for minor stealing and 2 for attempted suicide. Only 10 had served a prison sentence before.

We set out to investigate the somatic, endocrine, and psychological state and to see whether any of these modes of existence could be correlated with the sexual abnormality. We looked for elements common to the group by which homosexuality could be identified apart from active sexual behaviour and for the milestones in the development of the urge and in its establishment as a strong or even inevitable determinant in their social behaviour. The objects were explained to each prisoner. A few showed a natural reluctance to divulge information that might be disadvantageous to them, but confidence was soon gained, and we wish to record our appreciation of their frankness and desire to co-operate, although some had no more wish to be relieved of sexual drive than heterosexuals. A case history, according to a standard plan, was taken.

The meaning and significance of sexual feelings, intensity, constancy, and variability of the urge, the enduring or love attachments, the choice of age of partner, and the attitude to the opposite sex were fully discussed. Physical examination was made and deviations of body build and male secondary sex characteristics, effeminacy, and signs of endocrinopathy were looked for. Many were photographed for record, originally with the idea of somatotyping. This was later abandoned as of little value.

Hormone analysis on 48-hour urines was carried out in each case, but for technical reasons the results were regarded as reliable in only 49. Seventeen prisoners, known to be not homosexual, of corresponding age and length of sentence, whose prison life resembled that of the subjects studied, agreed to act as controls. Their average age was 35 years, in the range 24 to 48. For a variety of reasons complete data were either not available or were regarded as unreliable in some of the 64, so that the totals are not the same for all investigations.

Marital Status

Forty of the men were single, 20 married, 3 divorced, and 1 was widowed. Kinsey *et al.* (1948) have emphasized the continuity of the gradations between exclusively heterosexual and exclusively homosexual behaviour. He evolved a seven-point scale for the estimation of degrees of homosexuality, the individual's place on the scale being determined by assessing the amount of overt homosexual experience and psychic reaction to sex factors. He made it clear that it is impossible to divide people into two categories, homosexual or heterosexual, since people show changes in their ratings on the heterosexual-homosexual scale or even change from exclusively heterosexual to exclusively homosexual patterns, or vice versa. Kinsey ratings are: 0=exclusively heterosexual, no homosexual experience; 1=predominantly

heterosexual, only incidentally homosexual; 2=predominantly heterosexual, but more than incidentally homosexual; and so on up to 6=exclusively homosexual.

When the marital status of our cases is correlated with the appropriate Kinsey rating we find that there is a distinct shift to the heterosexual end of the scale for the "married" group as compared with the "single" group (Table I). The groups have been condensed for statistical evaluation (Table II). The distribution among

TABLE I

	Kinsey Rating						
(Het. S.)	0	1	2	3	4	5	6 (Hom. S.)
Single	—	1	6	5	4	16	8
Married, divorced, and widowed	—	5	4	5	4	5	1
Total in each group	—	6	10	10	8	21	9

TABLE II

	Kinsey Rating		
	0+1+2	3+4	5+6
Single	7	9	24
Married, divorced, or widowed	9	9	6

the three groups is contingent upon the marital status of the subjects, and on the Chi-squared test is statistically significant ($P<0.05$)—that is, the probability of this difference between the two groups, married and single, occurring by chance is less than one in twenty.

Health Record

More than half the cases gave a history of good health, and only three a history of much illness. There was a history of head injury with concussion in 10 cases, and in five it had antedated the first admitted homosexual behaviour. This figure of 8% does not support the proposition of Silverman and Rosanoff (1945), who reported evidence of an inherited or early acquired organic abnormality of the central nervous system in a significant proportion of 55 homosexuals in a penal psychopathic unit and thought it of causative importance.

There was a history of syphilis in two cases, of gonorrhoea in two, and of syphilis and gonorrhoea in one, contracted in the Services.

In 10 out of the 64 cases (15.8%) there was a history of psychiatric illness: anxiety states, 4; depression, 2; psychopathic personality with depression, 2; chronic alcoholism with depression, 1; chronic alcoholism, 1. Of these 10 cases, three had had recent treatment in mental hospitals. It has been calculated that 8% of the population will have a nervous breakdown and that 3% will at some time have a nervous illness necessitating admission to a psychiatric hospital (Henderson, 1955). It is of interest that the occurrence of nervous illness (15.8%) and of hospitalization (4.5%) are both higher than the normal expectation. Only two had attempted suicide.

Physical Development

Physique.—It has often been stated that typical homosexuals are either of feminine body build—that is to say, with broad hips, rounded contours, and relatively narrow shoulders—or thin and weedy, of the physique corresponding to Sheldon's (1940) ectomorph. In the former there is a feminine distribution of fat—deposited on the hips, thighs, and clavicular regions. In 56 cases a simplified classification of physique on the lines of Sheldon was carried out: 33 were mesomorphs, 10 ectomorphs, 4 endomorphs, and 9 intermediate types. Almost two-thirds of the 56 were of good physique (the mesomorphs) and only 10 of thin linear physique (ectomorphs). No case showed a typical feminine distribution of fat, and therefore, from the point of view of physique, the group was normal.

Secondary Sex Characteristics.—In two cases there were significant departures from normal sex development—very small testes in one and a solitary normal-sized testis in another. In approximately one-third there was a heavy growth of hair on limbs and trunk and in only four the female distribution of hair—that is, no extension of hair upwards from a horizontal line just above the pubis. Of these four, a definite endocrine abnormality was found in one case only (No. 101). The characteristics of the four were:

Case 23.—No hair on trunk and limbs, apart from pubis and axillae; small genitals; normal breasts and fat distribution. Kinsey rating 5.

Case 44.—Extremely little hair; genitals of average size; breasts and fat distribution normal. Kinsey rating 5.

Case 62.—Hair as Case 23; large genitals; breast and fat distribution normal; Kinsey rating 6.

Case 101.—Extremely little hair; penis normal; testes vestigial (about ½ in.—0.6 cm. diameter); breasts enlarged, tender, and rounded like a girl's. He was tall and thin, and had very little fat. Kinsey rating 6.

Of the 50 cases in which the physical development was recorded, 48 had normal masculine-type breasts. Of the remaining two cases, one (Case 14) had breasts "well padded" for a male. The other (Case 101) is described above.

Investigation of the physique of the group did not demonstrate a relation between effeminacy and homosexuality. There was no clinical evidence of endocrine abnormality, with the possible exception of Case 101. The development of secondary sexual characteristics had followed the usual pattern in age and appearance. The average age for puberty was 14.37 years.

Occupations

The occupations and social class of the 64 cases are shown in Table III.

TABLE III

	Social Class	No. of Cases
Labouring	V	21
Teachers	II	8
Clerks and warehousemen	III	6
Driving jobs	III	4
Gardeners	IV	3
Builders and plumbers	III	3
Cooks and bakers	III	2
Butlers and domestic servants	IV	2
Clergyman	I	1
Various	—	14

The "various" included a wood machinist, tailor, social worker, poster writer, barber, florist, spiritualist medium, mental nurse, cinema manager, printer's reader, cinema projectionist, quarry manager, accountant, and one unknown. According to the Registrar-General's Classification of Occupations the 64 cases are: class I, 2 cases; class II, 12; class III, 23; class IV, 5; class V, 21; unknown, 1 case.

Intelligence and Personality

If an I.Q. of 90–110 is taken as average, the intelligence of the group was: average in 38 cases, below average in 16, and above average in 10. The belief that homosexuals are above average intelligence and social class is not confirmed in our series. Kinsey reports that pre-adolescent sex play is carried over into adult life in 42%, the incidence being higher in the lower educational levels, and that there is less homosexual activity the higher up the social level. Our findings are in agreement, and the peak incidences are in social classes III and V.

The personality of the 64 cases has been classified as: (1) Extrovert (28 cases); persons who are sociable, with external interests. (2) Neurotic (25 cases); persons who are anxiety prone or unstable, concerned with health, shy, and nervous. (3) Introvert or schizoid (11 cases); reserved persons who tend to isolate themselves, may be suspicious,

have few friends, and few or no outside interests. Mild psychopathic traits occurred in two of the cases. It is of interest that 56%—36 out of 64—were of neurotic or schizoid personality, which seems much higher than one would expect in an average population. It is said that some cases of homosexuality are due to inherent or acquired timidity, inadequacy, or personality traits which restrict social contacts to males and hence sex life to males. These personality assessments support this to some extent. It is also relevant how far this type of personality is a product of a disturbed parent/child relationship, especially rejection by the parent of the opposite sex and over-attention or domination by the parent of either sex. In many of our cases there was an unusually deep dependent relationship with the mothers. Case 28 described it as "mutual adoration." That homosexuality may be a symptom of psychopathic disorder has been suggested by Slater (1955) in discussing its genetic aspects. Forel and Kraft-Ebbing years ago, and more recently Noyes (1948), thought that many homosexuals were psychopaths or neurotics. Kinsey takes the view that homosexuality in itself does not provide evidence of psychopathic personality and that a high proportion of homosexuals would not be considered as psychopaths on the basis of anything else in their histories. Our experience of convicted and other homosexuals agrees with this.

Interests

It is commonly believed that homosexuals incline to intellectual and artistic interests and enjoy feminine occupations. The case material has been analysed according to: (1) Intellectual interests (10 cases)—for example, literature (fiction and non-fiction), philosophy, interest in national and world affairs, serious politics, science; (2) sport (37 cases)—for example, both participation and supporting interest in sports; (3) music and art (34 cases)—for example, active or passive indulgence in music, painting, sculpture, and the theatre; (4) feminine interests (7 cases): these were noted only if there was a pronounced interest in such subjects as housecrafts, feminine fashions and garments, care of young children, etc.; one man had brought his brothers up, nursed them, bathed them, changed their nappies and, when a boy, preferred to stay at home in the evenings to do housework. Eleven cases had no interest in any of these activities. None had an interest in all four.

It is most unlikely that 55% of the normal population would have artistic interests, so this analysis supports the view that homosexuals on the whole incline to cultural tastes. Also, 11% interested in specifically feminine activities seems much more than normal, but 16% favouring intellectual subjects is probably no higher than normal and disagrees with the view that homosexuals are unusually intellectual.

Nine of the 64 (14%) were scoutmasters or assistant scoutmasters, and, with the possible exception of one, all had had homosexual relations with scouts under their care. This suggests either that scouting strongly activates latent homosexuality or that homosexuals deliberately or unconsciously may join the scouting movement because of the attractiveness of boys or of the opportunities.

Alcohol

Alcohol was not important. Only five had been heavy drinkers, with two probable chronic alcoholics. One man preferred women when sober, but was homosexual when he had taken drink; and another said that his homosexual drive was increased by drinking. Norwood East (1947) states that "lessened control of the higher mental faculties resulting from alcoholic indulgence may disclose for the first time the latent homosexuality."

There was a high incidence of excessive drinking or chronic alcoholism in the fathers of our group, which is of interest. In 16 of the 64 it was severe enough to disrupt home life. Although there is often a connexion between alcoholism and homosexuality, since public-houses offer opportunities for associations between men, there is no record of homosexuality in any of the fathers. This pronounced incidence of alcoholism may possibly be an indicator of latent homosexuality in the father, and a genetic factor may therefore be involved.

Attitude to Offspring, Other Children, and Siblings

Of the total of 24 married men (including divorced and widowed), 15 had a total of 43 children, of whom 21 were boys. There were nine childless marriages. Of these 24 men, 17 expressed affection for children. The remainder were lukewarm, but no one actively disliked children, 11 preferred boys, three girls, and 10 had no preference.

Many homosexuals wish to have children in marriage, but without desiring coitus. One man (Case 43) stated that he would have married to have children, but objected to sexual intercourse.

The 24 married men had an average attitude to siblings, affection in 17, friendly relationship in 3, equivocal in 2, and antagonism in 2. Ten preferred sisters, Only one preferred a brother. The remainder were indifferent. There were a number of instances of homosexuality in childhood and youth with brothers, but sex play with sisters seems rarely to have occurred.

Other Known Homosexuals in the Family, and Genetic Aspects

Other homosexuals in the family were discovered in only five cases. These were two older brothers, two maternal uncles, and a maternal male cousin. The question of familial incidence in connexion with the circumstances of the "earliest awareness of homosexual drive" raises the issue of genetic factors which the present study cannot clarify. Silverman and Rosanoff (1945), studying 55 homosexuals in an American prison hospital, report that in only two cases was a definite history of homosexuality in the family obtained.

Neustatter (1955) quotes Norwood East that many homosexuals have their first homosexual fantasies at a very early age—for example, 4 years old—before seduction is likely.

Kallmann's (1952) study of homosexuality in 85 twins is very relevant. Forty-five of the 85 had a binovular twin brother, and 42.3% of these displayed overt sexual behaviour. This approximates to Kinsey's estimate of 37% of American males who had had at least one homosexual experience to the point of orgasm. The other 40 were uniovular, and all the twin brothers showed overt homosexuality, including those who had been brought up away from the twin brother. They all denied mutual homosexuality and apparently kept their sex life secret from their twins. Kallmann concludes cautiously that, from a genetic point of view, there are multiple factors operating and that male homosexuality is an "alternative minus variant in the integrative process of psychosexual maturation comparable with left-handedness in a predominantly right-handed world."

Heterosexual Experiences of the Group

The preference for the company of men or women was expressed as follows: 33 preferred men, 18 preferred women, and 13 were indifferent. There was no correlation between the preference and the Kinsey rating, but social reasons may have decided the choice. One man (Case 23). Kinsey rating 5, preferred women's company "because he was lonely and wanted someone to go around with." Another (Case 32), Kinsey rating 5, preferred women and would have liked to have a wife and children to look after. He was impotent with women. Some homosexuals marry to secure a home and comforts.

Of the 64 cases, 45 (70.3%) had had heterosexual experiences, and most of them on many occasions. This agrees with the Kinsey ratings, which show a scatter from grades 1 to 6, with the peak at 5. Of these 45, 22 were heterosexually promiscuous and had had intercourse with at least three

different women. Obviously there was no grade 0 (completely heterosexual) but there were only nine grade 6 (completely homosexual). This shows that it is impossible to divide men precisely into two groups—homosexual and heterosexual. Table I shows that the highest incidence is in grade 5.

First Awareness of Sex and Development of Homosexuality

The limits of first awareness of sex were from 5 to 17, the mean 12.3 years. Of 61 cases with reliable data, the first observed sex drive was heterosexual in 37 (60.6%), the homosexual in 24 (39.4%). Examples of the former are:

Case 7.—He became aware of penile erections with fantasies of females.

Case 8.—When in hospital for scarlet fever at age 12, he was bathed by a nurse and had an erection.

Examples of early homosexuals are:

Case 2.—He has never at any time found females sexually attractive or had any heterosexual experiences. The first sexual awakening was at the age of 6 when he was introduced to mutual masturbation by another lad and thereafter practised it.

Case 3.—At age 15, in a weight-lifting class with other boys dressed in shorts, he had an erection and emission; the sight of other boys semi-stripped excited him sexually.

It is clear that, apart from seduction, in about 40% and chiefly those with rating 5 or 6, the sex drive was homosexual from the beginning. Although this does not necessarily rule out a psychogenic explanation it does demonstrate that it is not necessarily a manifestation of vice, but has some of the characteristics of instinctive behaviour with which the individual has to contend (or accept) whether he likes it or approves of it, or not.

The first awareness of homosexual urge was later than the sex drive in general. The first awareness of homosexuality in 56 cases ranged from age 5 to 46, the mean 16.6 years. This was 4.3 years later than the mean first awareness of the sex drive in general—that is, 12.3 years. This is accounted for by the fact that in many cases the sex drive was initially heterosexual but later became bisexual or homosexual. For example, one man (Case 5) declared that heterosexual attraction was stronger than homosexual until he was 21, when it swung over to homosexual. It is unusual, however, for a change from heterosexual to homosexual to occur after the early twenties. In this series only five were first aware of homosexual drive after 22. Case 40 is of interest. This man was a married Welsh coal-miner aged 50, of low intelligence. A year before the offence his wife had discontinued sexual intercourse. This frustrated him. He was convicted of sodomy with two boys, aged 8 and 9, on a mountain. He said that something compelled him to the acts which he could not have prevented. They were probably substitutive owing to deprivation of a normal sexual outlet.

Nature of the Earliest Homosexual Experience

Mutual masturbation with an individual of the same age was the usual first homosexual experience, and occurred in 42 cases (65.6%). Sodomy was next with 12; then came handling of another's genitals in five, the subject's genitals were handled in one, and in one there was an act of fellatio. A history of seduction by an older male was elicited in 14 cases, the seducer being a relative in only four—in two an older brother, and in two a maternal uncle. Thus seduction by a male may really be important as Stoller (1946) and many others have suggested, as it was reported by 20% of our group.

Importance of Schools.—Only eight cases out of 61 (13%) claimed to have been initiated at school, and the number of public-school boys, if any, must have been small. The mean age of first awareness was 16.6 years, which is beyond usual school age, and organizations such as scouts, boys' brigades, joint clubs, and choirs are more important areas of possible initiation.

Military Service.—Very few of the men were initiated to homosexuality in the Forces. One man (Case 15) stated that "the other soldiers were doing it, and it aroused similar feelings in me." No further information was available, and we did not have the opinion that, unlike scouting, the opportunities or contacts of national service were provocative. Tradition and censure may be deterrents.

Type of Homosexual Activity

The most common forms of homosexual activity are sodomy and mutual masturbation. Much less common are fellatio and intercrural and interbuttock intercourse. Any, or all, may be indulged in by the same person, and relatively few restricted themselves to the one mode. 45 (70%) indulged habitually in sodomy; 25 habitually active, 15 both active and passive, and 5 passive only. 39 of the 45 also indulged in mutual masturbation. 43 (67%) regularly indulged in mutual masturbation, of which 28 also practised sodomy—13 active, 12 using either or both, and 3 in a passive role only. Fellatio with five cases was rare, and in none was it the major form. According to some of the cases, prostitutes suggest this to certain of their clients to stimulate libido.

It is said that homosexuality implies passivity and that the "true" homosexual prefers the passive role. This is contradicted by this series, since only 5 out of 45 cases practising sodomy were exclusively passive. They rate high in the Kinsey scale—one in grade 4, one in grade 5, and three in grade 6. If one uses the term "passive" in regard to personality there were no striking correlations. The majority of the men sought their varying objectives with as much energy and initiative as the non-homosexual prisoners. A very few adopted a rather feminine appearance and carriage, but this could not be equated with passivity, although women are usually regarded as more passive than men.

There was no history of sadism or aggression in any case.

Perversions and Oddities.—Contrary to the view that the sex life of homosexuals shows many abnormalities, in only three cases were deviations other than homosexuality found. Case 26 was attracted by boys' noses; they were sexual objects, and if he grasped a boy's nose he had an orgasm. Case 101 was stimulated by the sight and touch of breasts, male or female, even his own. This is abnormal only in so far as it is pathologically intense. Case 82 desired to be a woman in every possible way. He even kept house for them and indulged in sex play with them to the point of orgasm, but "only as a fellow lesbian." He eagerly wanted to be a man's mistress or wife, to bear children, breast-feed them, and rear them.

Object Choice: Boy or Adult, or Both?—The object choice may be a boy or an adult or both, but there are no representative studies of the relative preference, and authors do not agree. Since long sentences are much more usual where boys are involved and ours is to some extent a selected group, it is doubtful if the findings are representative, although the study covers persons from many walks of life and a wide spread of ages. The distribution of object choices for 60 cases is: boys, including teenagers, in 39, both boys and adults in 15, and adults only in 6.

Stanley-Jones (1947) states that sexual seduction of young persons by the "natural invert" is rare, and these people choose an adult as their object. This is probably not true; and, in contrast, Taylor (1947a) reported that of 96 men admitted to Brixton Prison in 1946 charged with homosexual offences, 57 involved boys.

Constancy and Number of Partners Involved, and Nature of Attraction

Of 60 cases with valid data 83% were promiscuous. The remaining 17% had a succession of partners, rarely sticking to one for long. A few would have preferred a stable association, but were in fact promiscuous. The two reasons given for desiring a single partner were (*a*) affection and

(*b*) greater safety from detection by the police and from venereal disease.

The homosexual attraction was considered as physical, intellectual and cultural, and social. The term "physical" implies that it is bodily physical attraction that excites, irrespective of other qualities. 61 cases contributed. The attraction was purely physical in 26 (42.6%) and in 22 (36%) physical plus "intellectual" or "social." It was just something they could not explain. Often the social and intellectual level of the partner was of no consequence, and probably the attraction was physical. Two men said that nothing mattered, except that the boy should be interested in homosexual activity. So strong was the physical attraction that one man, a poster-writer, "fell madly in love" with a defective boy while in prison. Intellectual, cultural, or social qualities did not act alone as a powerful source of attraction in a single case. When in a few cases a strong emotional relationship develops it is usually stimulated by frequent sexual activity. The majority of homosexuals appear to seek only a sexual outlet. What constitutes physical attraction varies, examples being "a smooth-faced skin," "good-looking youths," "fair-haired smooth-skinned people," "athletic type with handsome features." Where the relationship was monogamous the affairs never lasted more than four years, and after parting another affair was soon organized. Although lasting and deep relationships are possible between adult homosexuals, in our material there were only six (10%) whose choice was exclusively adult, and only two of these restricted themselves to one partner.

Homosexual Drive: Its Strength and Variability

The homosexual drive does not seem to be more powerful than the heterosexual. This implies that the problems of its control are similar. It sometimes seems that the control of homosexuality is much more difficult than of heterosexuality; but this is not necessarily so, and even in the 15 cases where it was very strong it did not appear to be uncontrollable. In 42 of 61 cases (68.8%) its intensity was regarded as average, but in only four cases as weak. It is of interest that in these the Kinsey ratings were 1, 2, 2, and 5 respectively, and the 15 cases were chiefly at the opposite, homosexual, end.

The ability to control drive varied, and it was assessed as good in 26, fair in 19, and poor in 16 cases. To some extent the degree of control is related to the strength of the drive, and 11 of the 16 with poor control had very strong drive. Many cases, however, appear to have made very little attempt at control. For example, one man (Case 82), Kinsey rating 6, declared that "man should follow his nature" and that he would indulge as far as he physically could and his partner would allow.

The strength of the drive seems to vary with circumstances, particularly with the temptations. Homosexuality is provoked if opportunities are offered and the impulse is strong and difficult to resist, but if there are no opportunities it tends to diminish. It was claimed that deprivation of heterosexual possibilities sometimes produces an increase in strength of the homosexual urge; for example, when a wife became inaccessible or averse or lost interest. Two men said they lost interest in women and became homosexual after a broken love affair; and several did so for fear of making a woman pregnant.

The homosexual drive seemed to be "steady" in intensity in only 23 cases, and phasic and irregular in the remainder. One man thought it was more intense in the summer because of the better opportunities. In three it was strongest when they were worried.

It was not possible to estimate the frequency of indulgence, for the governing factor was usually opportunity.

Effect of Segregation in Prison and Attitude to Social Sanctions

In 17 out of 58 cases (29.3%) there was no change in the intensity of the homosexual urge during imprisonment; in one case the intensity increased, in 28 (48.3%) it was definitely reduced, and in 12 (20.7%) it disappeared or became dormant. Two of the last group thought they had become heterosexual instead.

Twelve expressed feelings of shame or guilt. The majority of the remainder were indifferent to the social and legal sanctions but were anxious to avoid being caught again or punished.

Sex Dreams and Homosexuality

Kinsey *et al.* (1948) state: "The parallel between the content of the nocturnal dream and overt daytime experience has been recognized by all people, primitive and civilized, since the dawn of history." He found that the dream situations were usually heterosexual when the sex life was heterosexual and homosexual when it was homosexual, and when there were both heterosexual and homosexual experiences the dream situation showed both. According to Taylor (1947a) 11 of 13 "true inverts" had homosexual dreams.

Our findings are in agreement. Of 60 cases, 19 (31.6%) had homosexual dreams (15 of these had an average Kinsey rating of 4.8), 7 had mixed homosexual and heterosexual dreams (average Kinsey rating, 3.1), 12 claimed to have only heterosexual dreams (average Kinsey rating was 3.0), and 22 had no sex dreams.

Endocrine

There have been a number of attempts to discover an endocrine cause in homosexuality. Wright (1935), Glass and McKennon (1937), Neustadt and Myerson (1940), and others thought that there was a reversal of sex dominance from male to female. They claimed to find a reduction in androgens measured as 17-ketosteroids and an increase in urinary oestrogens, so that the normal ratio of androgens/oestrogens was significantly reduced. These results have been criticized on the grounds of technical inaccuracy, and Myerson and Neustadt (1946) were unable to substantiate their earlier work. Allowance for age does not seem to have been made. According to Hamburger (1948), 17-ketosteroid excretion is maximum at 25 years and decreases thereafter. His average for 137 males was 15.4 mg., the upper and lower limits being about 50% above and below the average respectively.

In our study estimations of urinary ketosteroids were carried out by Callow's modification of the Zimmerman reaction for ketosteroids, and oestrogens were expressed in rat units per 24 hours. The results are shown in Table IV.

TABLE IV

	Age Group (Years)	No. of Cases	Ketosteroids	Oestrogens	A/O Ratio
Homosexuals	20–29	8	20·1	10·5	2·3
	30–39	14	19·5	5·0	3·84
	40–49	14	13·0	7·5	2·54
	50 and over	13	11·4	5·64	2·35
Controls (normal males)	20–29	3	17·9	—	—
	30–39	10	16·1	12·8 (9 cases)	2·5 (9 cases)
	40–49	3	14·2	12·6	1·9

These findings make it almost certain that there is no significant difference between the ketosteroid output of homosexuals and normal males, and there is little difference between the androgen/oestrogen ratio of the homosexuals and the control group. There is surprisingly little factual literature dealing with homosexuality, and only one paper (Garst and Stobin, 1955) on endocrine investigations on homosexuals in prison. Unfortunately their material was a mixed group of 49 homosexual and heterosexual sex offenders. Nevertheless there was no significant difference between the 17-ketosteroids of the 49 sex offenders and the 20 controls. There is in fact no evidence that castration leads to alteration in the direction of the sex drive, although it reduces its intensity. Stürup (1948), discussing the results of castration in 161 cases in Herstedvester Institution in

Denmark, said that four sexual recividists were all homosexual. More recently the *British Medical Journal* (1955), quoting from the *International Review of Criminal Policy*, No. 4, 1953, refers to 134 sex offenders, including 49 homosexuals, treated by castration in Denmark. Of these, the five who relapsed were all homosexuals who associated with boys. None of the castrated heterosexuals relapsed.

The available evidence is that the direction of libido is influenced by psychological and environmental conditions and possibly a genetic factor, and not by sex hormones, which appear only to modify the intensity of sex activity. This view is shared by Allen (1947), Beach (1948), Kinsey *et al.* (1948), and Swyer (1954). Our investigations accord with these views and are completely against the hypothesis that homosexuality is an endocrine disorder in any sense.

Cases with High and Low Ketosteroid Excretion.—There were seven cases with ketosteroid excretion 50% above the average level—that is, approximately 24 mg. a day. They were 29.6, 30.6, 27.8, 35.5, 26.2, 40.1, and 43.5 mg. a day respectively. There were no special features in the case histories of any of these subjects. The only point of note was that the Kinsey rating of the group was mainly at the homosexual end of the scale—rating 6, 5, 5, 5, 5, 1, and 3. The average age of these men was 32.7. There were no subjects with feminine characteristics or physique, and the constitution varied from spare to muscular. The forms of homosexual activity varied. Four subjects, aged 50, 61, 51, and 44 (average 51.5), had low excretion values —7.4, 7.8, 7.3, and 4.7. Their Kinsey ratings were 5, 5, 1, and 1. None showed any abnormalities of physique or were feminized. There were no special features.

Treatment

Six cases had had recent psychotherapeutic treatment, either in Wormwood Scrubs and Wakefield Centres or outside prison as well. Their Kinsey rating was 6, 5, 6, 5, 5, and 2. While there had been no alteration in the direction of sex drive, there had been an increase in well-being with a reduction in anxiety.

Several men refused treatment because it meant leaving an "open" prison for a "closed" prison. One claimed that he had seen four failed results in prison. Others said they would only like to have their sex drive reduced to avoid reconviction but did not want any alteration. Five cases had received oestrogen therapy in prison because of difficulty in controlling sex drive and of the associated feelings of anxiety. They all reported a reduction or abolition of libido, with corresponding freedom from the need to seek relief in masturbation or to indulge in erotic fantasies. Two of the patients claimed an improvement in general health. Their Kinsey ratings were 5, 6, 1, 1, and 5. No case reported any change from homosexual to the heterosexual direction.

There was an excellent review on treatment by Taylor (1947a), who studied the year's intake of persons charged with homosexual offences admitted to Brixton Prison in 1946. There were 96 such prisoners, compared with 198 charged with heterosexual offences. Of the 96 cases, 57 involved offences against boys. Taylor classified the 96 cases into four groups: (1) pseudo-homosexuals, (2) bisexuals, (3) prostitute group, and (4) true inverts, the last consisting of only 13 cases. Few of group 1, none of group 2, none of group 3, and few of group 4 were suitable for treatment. Of the 13 true inverts, seven had had intensive psychotherapy by well-known psychiatrists prior to conviction. Of the remaining six, three refused treatment and three were unsuitable for various reasons.

Discussion

This investigation of 64 homosexuals undergoing long prison sentences has demonstrated only minor differences between homosexuals and normals. In this, our study agrees with our wider experience in clinical practice and hospital, and that of one of us (A. L.) previously as a prison medical officer. These conclusions have all the greater force if one considers that the case material was selected for the intensity of homosexuality, as it is in men with a long history of persistent homosexual activity, mainly against boys, that one would expect to find other aspects of homosexuality or special differences most marked. There is no evidence of endocrine disorder as such, or any evidence that a particular kind of constitution or body build is associated with homosexuality.

Homosexuality appears to us to manifest itself as though it were a constitutional condition, although psychologically determined, with possibly a genetic factor. This is not to say that homosexual behaviour is inevitable or uncontrollable. It appears that latent homosexuality can be activated by a combination of circumstances, and in some cases heterosexual feelings and activity may weaken and disappear, being replaced by homosexuality. Bisexuals and homosexuals may get married and associate with women. The effeminate manner and curious preciousness of attitude and behaviour so much mimicked and ridiculed is a real part of the psychological pattern of a small proportion of homosexuals. It appears to us the outcome of the continuous conflict between the masculine role in society and feminine urges. In this, it appears to be an overdramatization, an unconscious theatrical urge to attract attention to the role the individual desires to play. It is not intended to be an enticement for homosexual purposes, and is an end in itself.

This conception of homosexuality agrees with the general characteristics of the contributions that homosexuals have made to the arts. By and large, they have not been responsible for profound creations in music, literature, or even in painting. They often excel in design, decoration, theatre, dancing, plastic display, interior decorating, and dress designing, which require an innate taste and sense of colour or form. History agrees with our small series that prolonged, faithful, and deep homosexual relations are greatly the exception, and the legendary examples from the classics usually end in sorrow and death.

It seems to us that there should be more clear thinking about treatment. We have yet to find any evidence, in our experience or in literature, that the direction of intensely homosexual drives can be successfully altered.

Lack of opportunity and relief from anxiety and loneliness can do much to limit homosexual activity. We feel that confirmed homosexuals who seek provocative hobbies or occupations like teaching and scouting should be judged both on their homosexual behaviour and on the decisions that they took in order to get the opportunities. There is no doubt that psychotherapy in selected cases can do much to establish a better social adjustment and the ability to control homosexual urges.

Hormone treatment undoubtedly succeeds in diminishing libido, and it relieves patients from anxiety by giving them the feeling that they can control their urges.

Summary and Conclusions

Sixty-four homosexuals in prison were studied.

There was no evidence of endocrine abnormality or marked effeminacy, and the urinary excretion of 17-ketosteroids and the androgen/oestrogen ratios were of no diagnostic value.

Neurotic and schizoid types and a history of psychiatric illness were rather high. Psychopathy and alcoholism were insignificant. High incidence of alcoholism in parents seems to be important, and some of the cases were products of broken homes.

The group was not more intelligent than average, but was more interested in art and culture.

The peak incidences for social class were III and V of the Registrar-General's Classification of Occupations.

Twenty-four were married and had produced 43 children.

Only half preferred men for company, and social reasons were said to be responsible for the homosexual behaviour in about 40%. The homosexual impulse was first experienced at an average of 16.6 years. In some cases homosexuality replaced heterosexuality, but rarely after the early twenties.

In 65.6% initiation was by persons of the same age. Seduction by an older male occurred in 14, but in only 4 by a relative. Military service was not responsible, but group boy and youth activities were suspect. School life was not implicated.

Of the cases, 90% indulged with boys alone or boys and adults.

Dream life of the cases reflected their basic homosexuality.

Other homosexuals in the family were reported by only five—two brothers, two maternal uncles, and a cousin.

The direction of the libido was not influenced by hormones or psychotherapy, but its force was reduced by treatment with oestrogens. Few patients desired treatment, and most of these only to reduce the urge so as to avoid reconviction.

Assessment of these cases and the problem of homosexuality were greatly clarified by using the Kinsey homosexual–heterosexual rating scale.

We wish to express appreciation to the Prison Commissioners for affording us every facility to carry out this work and to publish it (although it does not necessarily represent their views); to the hospital officers of H.M. Prisons, Leyhill and Bristol, for their whole-hearted co-operation; and to the many prisoners who willingly submitted to examination and study in the hope that society might benefit.

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THE CURE OF HOMOSEXUALITY

BY

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In the Wolfenden report the statement is made (p. 66), "We were struck by the fact that none of our medical witnesses were able, when we saw them, to provide any reference in medical literature to a complete change of this kind"—namely, a change in the direction of the sexual propensity from his own sex to that of the opposite sex.

The implication of this statement should not remain unchallenged; for it encourages the view that homosexuality is incurable. There must be many medical psychologists who could point to cures of this radical kind.

It is indeed commonly held that homosexuality is constitutional; that is to say, inherent in the physiological make-up of the individual; that as one person is naturally and constitutionally heterosexual, so, it is said, another is naturally homosexual. This carries with it the verdict: "Once a homosexual, always a homosexual."

Whether there are such constitutional cases cannot be dogmatically stated. There appears to be no direct evidence of this. Havelock Ellis maintained that homosexuality was of a constitutional type, but he admitted to me in person that he made this statement only because he wanted to emphasize that the individual could not help being what he was. But that would be equally so if the condition was due to psychological experiences in early childhood, for which the person is equally not responsible.

Indeed, the case of homosexuality differs little from other perversions such as fetishism in which the sexual impulse is transferred to an inanimate object like corsets or the hood of a perambulator, which can hardly be a constitutional propensity; and which can be cured by discovery of their infantile origin. If the sex instinct can be transferred to such objects as corsets, or patent-leather shoes, there seems no *a priori* reason why it should not be transferred or perverted to those of the same sex.

It is, however, not the purpose of this article to deal with such theoretical considerations, but to deal with the clinical aspects of treatment and cure.

What is Cure?

By "cure" I do not mean the normal transition from the homosexual to the heterosexual phase in adolescence (the "sight of a pretty girl" can do this); nor do I mean that the homosexual is merely able to *control* his propensity, whether on moral grounds or from fear of punishment, important as that is from the sociological point of view. Nor even do I mean, as it is claimed, that by religious conversion a person may lose his homosexual *desires*, unless he becomes heterosexual. Indeed, it is obviously not necessarily a sign of cure that the patient is rendered capable of having sex relations and bearing children; for, as the report states, he might do this by the help of homosexual fantasies. By "cure" I mean that he loses his propensity to his own sex and has his sexual interests directed towards those of the opposite sex, so that he becomes in all respects a sexually normal person.

If there is, in fact, a lack of cures of homosexuality, it is probably because in investigating the psychological causes we do not go far enough back.

For the orientation of homosexuality, and the deviation from the normal, appears from the following cases to go back to a much earlier age than is usually supposed; and only when these factors are revealed and dealt with is the patient radically cured.

It is fallacious, for instance, as the report says, to assume that homosexuality *originates* in a sexual assault by another male at puberty. It is true that such an assault may be the *precipitating* cause, and without this the youth might not have developed into a homosexual. But that in itself is insufficient as a complete explanation of the condition. For, if that were the case, far more boys would develop into homosexuals, since such assaults are a common experience in schooldays, and not merely in boarding-schools. Why is it that one boy so assaulted in puberty becomes a homosexual and another does not? It is because of earlier *predisposing* factors; and these appear to be of a psychological rather than a constitutional type.

The following cases demonstrate these facts and the possibility of radical cure.

Old Cases

Before coming to recent cases, mention may be made of four cases of homosexuality treated over 30 years ago, with three of whom I have recently made contact, the fourth having died in the meantime. These are given to indicate the completeness and permanence of the cure. Two of these were completely homosexual, and both had an attraction to the backside of boys, though neither was a practising homosexual. The other two were not entirely homosexual; for they were married and had children, but were able to have intercourse only by virtue of homosexual fantasies. Each preferred, and practised, homosexuality—the one in the form of mutual masturbation, the other of sodomy.

All four patients were completely cured of their perverse propensities, and all have remained cured, with no further episodes, by discovering the causes of their disorder in early childhood.

As an illustration of such causes let us take the patient who has since died.

His homosexual practices dated from the age of 11, when he was seduced by an "old boy" visiting his preparatory school. But that was only the precipitating cause. His history as revealed in analysis was briefly as follows. He had a mother who was very sensuously disposed towards him and aroused his sexual feelings by her cosseting and fondling. She died when he was 3, and he was put in charge of a strict and rigid aunt who gave him no affection. He grew up a sad and lonely boy throughout his early and school life. Reviving the experience of the assault at school, he declared that it was not the sex pleasure which intrigued him so much as the fact that someone had given him the notice and affection of which he had been starved since early childhood. The sexual practice now became the symbol of all the love and affection which he so much craved, and of course increased as adolescence advanced. It persisted into adult life, and ultimately got him into trouble with the police, which forced him to seek treatment. In analysis his original repressed sexual feelings towards his mother (obviously heterosexual) were revived, and, being released, developed as they would have developed if they had never been repressed. As a result of treatment he declared that he had completely lost the desire for youths, which after all was only a substitute for the loss of mother love, and he became completely heterosexual. The last I heard of him (prior to his death) was a paragraph in a daily paper saying that his wife was suing him for divorce for running off with another woman—which, if not the most desirable outcome of the analysis, at least confirmed the transference of his feelings from homosexuality to heterosexuality.

In the two cases of complete homosexuality where there was an attraction to boys' buttocks it was found that these objects of love were substitutes for the breast, which is a very common form of substitute, considering their similar shape, smoothness, softness, and body smell. Being ruthlessly deprived of the breast, the child resorted to auto-erotism as a solace, but with breast fantasies. Later the affection was transferred to an object reminiscent of both these desires—namely, to the buttocks, which were reminiscent of the breast, and to another male, someone like himself. The narcissism (self-love) which was adopted as a substitute for the mother's love was turned into homosexuality. Homosexuality is self-love once removed.

By the release of these early complexes, which fixated and so perverted their sexual propensities, these two complete homosexuals, like the partial ones, lost their perverse tendencies, and have been happily married for over 30 years (to the one woman in each case). They have children, and there have been no relapses. The basic causes of all four cases lay in infantile life.

Recent Cases

Mention may first be made of a particularly fortunate and exceptional case of a practising homosexual of 26. He had an undemonstrative mother who gave him no affection. But he received affection from the age of 3 or 4 from his older brother in bed at night, expressed in mutual masturbation, a habit which persisted with other males through school into adult life. Whether there were deeper causes was not revealed, for he lost his homosexual tendencies in five treatments, got married, had children, and three years later (writing to get advice concerning his brother, who also required psychological treatment), said that "marriage is a great success."

Such a cure in so short a time is, of course, quite exceptional, and a bit of pure luck, but nevertheless the cure appears to be radical and, so far, permanent.

A more typical case was that of a naval officer aged 25 who was a practising homosexual with no heterosexual interests; indeed, he avoided women, and this took him to join the Navy. In analysis he traced his symptoms back to infancy, when he was being breast-fed by his mother, got sexual feelings, gulped down his food, and choked. In reviving this incident he repeatedly choked and choked till he was blue in the face. This choking was repeated for some 15 to 20 interviews, till he "got it out of his system." This infantile experience produced fear of his mother and so fear of women generally, especially in their sensuous or sexual aspect, for it was in the process of enjoying himself sensuously that the disaster occurred.

It might be said that other children have these infantile experiences without becoming homosexual. That is true, and admittedly the factors mentioned are not the only ones; much depends on later experiences. If, for instance, this child had received love and reassurance from his mother, he would probably have overcome his fear of her and of women in general, and so have developed normally. Unfortunately his mother was a self-centred and selfish woman who did not bother with him. So his fear remained and his only resort was to his auto-erotism, which persisted throughout early childhood. This was later associated with fantasies of an "imaginary companion" with whom he indulged in mutual masturbation, and transferred itself later to actual male companions. The revelation of these causes abolished his fear of women. He has married, has children, and writes to say that "marriage is wonderful."

Another case is that of a non-practising homosexual, a barrister. He had a very difficult birth (which he relived in treatment with great horror), in which he felt his chin was caught on his mother's pelvic girdle, incidentally resulting in a tic of his head, now cured. He thus started off life with the sense of insecurity, which was not helped by the fact that his mother was busy divorcing his father at that time and handed him over to an unscrupulous nurse. This nurse used to tease him and put him into furious rages with her, and then stimulated him sexually to check his rages. His mother would come in at his screaming, and ask what was the matter, to which the nurse would "innocently"

reply, "I don't know!" and of course the child could not explain. This made him furious with his mother also for not understanding. Henceforth he regarded all women as a wash-out. He found solace in masturbation (the nurse having initiated him into sex feelings), which he could now indulge in without the taunts of the nurse. He later transferred these sex feelings towards boys, with homosexual fantasies of a sadistic nature, since the stimulation of his genitals by the nurse was associated with rage. His attitude towards women was that of anger and resentment, not mainly of fear, as in the previous case. It was a very prolonged treatment, but he is quite cured and is very happily married.

Another patient, a medical man, had the misfortune to be born with defective genitals. He had several operations in childhood, and suffered severe pain from the catheter his mother had constantly to pass. His mother assumed a grim attitude about the whole business; his father ignored his defect and never referred to it; and his brother was unsympathetic and went his own way. At public school he was laughed at, and was scorned and bullied on account of his defect. In this lonely, loveless life the one thing in the world he craved was sympathy and companionship, and especially with someone who would not scorn his defective genitals. The desire for homosexual affairs was mainly a desire for sympathetic companionship. But more specifically his attraction to the male genitals of another was his desire to *possess* a normal penis of his own *like that*. The release of all his early miseries and humiliation in a sympathetic atmosphere cured him of his homosexual desires. He sublimated his need for friendship and companionship in social and religious work, and, though a full marriage is out of the question, he has normal desires towards the opposite sex. The homosexual desires bother him no more.

A patient, a business man in the City, at present under treatment, has a tying-up sex perversion with boys; but a repugnance to the other sex. In imagery he reverts to being at the breast in infancy, being embraced and held tight in his mother's arms and getting an erection; whereupon his scandalized mother put him in his pram and strapped him in. He is furious, struggles, and in his struggle presses against the strap. This produces the same sex feelings as when he was pressed in his mother's arms. He therefore substitutes the strap for his mother's lost embrace, and later transferred this to being tied up. The recovery of this experience and the feelings associated with it cured his perversion. But he cannot be regarded as yet cured, for, though his symptom is no longer there, his sex feelings have not yet been transferred to heterosexuality, and treatment continues.

Discussion

Such cases as these, few and inconclusive as they are, appear to demonstrate that homosexuality *can* be cured in the full sense, provided we can trace the condition to its basic causes. These patients were cured when, and only when, their propensities were traced back to infantile experiences.

These cases inevitably raise many questions: for instance, how are these early memories revived; are they memories of real experiences or are they fantasies; how does the discovery of the causes lead to cure?

This is not the place to discuss these problems (which have been dealt with in my *Psychology and Mental Health*, and in many other books on psychopathology), the purpose of this article being purely clinical and not theoretical.

One thing may be stated, however, that these revivals of the origins of the perversions came from the patients themselves and were not the result of any preconceived theory or any suggestions on the analyst's part. Each case was taken at its face value, and, as in all medical work, an attempt was made to discover the specific cause, however deep-rooted, in each case.

It is the fashion now to decry these early memories. It is said that it is inconceivable that a patient can relive such early experiences. Whether these early "memories" were true or imaginary, the fact remains that these patients were cured, and radically cured, when, and only when, these experiences were revived. If these experiences were just fantasies, how are we to explain the fact that imaginary fantasies should have such a salutary effect in curing an otherwise incurable condition? The argument from inconceivability is the weakest of all arguments.

In any case, there is no reason why experiences such as I have mentioned should not be true. Instances like that of suffocation at the mother's breast and consequent fear of females is not such an impossible experience for a child to have; nor is it inconceivable that this should produce a fear of women; nor that this should make him turn into himself and then to others of his own sex for gratification.

Nor is there any reason why experiences of infancy should not be recovered. An infant of a few days or weeks old has retention and reproduction of previous experiences, and gets excited when it sees its mother preparing to feed it. There is no reason why, if we can remember what happened to us at the age of 4, we cannot be made to remember what happened to us at 6 months. If it is dogmatically maintained that it is impossible for an adult to revive the experiences of infantile life, the onus of proof of this lies with those who make such assertions. What proof is there that these experiences cannot be revived?

On the other hand, when one sees the patient choking and struggling for breath, it leaves one with little doubt that such reproductions are real—as real as when a shell-shock patient relives under hypnosis the experience of being blown up or buried; and with the same result—namely, the release of the repressed emotions, the relief of the patient, and the abolition of the symptoms.

While these cases demonstrate the possibility of cure, in some cases at least, of homosexuality, the fact remains that it is usually very difficult to cure, not only because its roots are so deep, but also because of the patient's reluctance to get rid of a symptom which, afer all, is his main pleasure in life. The treatment is very time-consuming. In the choking case it required 164 treatments: some cases need even more. Whilst one is healing one homosexual, one might be treating two or three patients suffering from other forms of neurosis. It is for that reason, together with the uncertainty of getting the patient's full co-operation, that I no longer take homosexuals on for treatment, for the number of cases any one analyst can treat is limited.

There have, of course, been failures in the intervening period. One was a famous actor—a complete homosexual with transvestist fantasies and practices. I failed to get him freely associating, and after 12 interviews said that it was hardly worth continuing. In a letter he wrote a week or so after, he said he had only come in order to prove that homosexuality was incurable—no doubt to salve his conscience.

In a further instance of failure, that of a regular "young man about town," the homosexuality was associated with anxiety. Since the anxiety was the more distressing symptom to the patient, this was taken first, as a gateway to the treatment of the homosexuality. The anxiety was cured, with the result that the patient said, "Thank you very much," and was able to carry on with his homosexuality without anxiety—a comforting situation for him, but hardly a desirable issue of the treatment.

Three others had to be given up; for though they wanted to be cured, as evidenced by their coming for treatment, either because of the subconscious reluctance to lose their symptom or because of lack of persistence, they gave it up.

Finally, there was the case of a clergyman who was anxious to be cured, and, so far as I could see, was sincere

in his desire and co-operative, but, in spite of great persistence on both sides, he was not cured. As there did not seem to be any constitutional abnormality, it can only be assumed that this failure was due to some defect in technique.

Analytic treatment is in itself no solution to the whole problem of homosexuality, because of the time-consuming factor. But the continued investigation of such cases is desirable, for, if the causes of homosexuality as lying in infantile experiences can be substantiated it should be possible by avoiding these experiences to prevent it. If the causes in each of the cases mentioned are studied, it is evident that they could have been prevented by different treatment at the hands of the parent. The prevention of homosexuality, like that of all the other neuroses, seems to lie in right parenthood.

Summary

The origin of homosexuality and other deviations from the normal seems to originate in very early childhood experiences. Cases are given, some relating to treatment 30 years back, and others more recent, which indicate that when these causes are discovered and the experiences revived the patient is able to adjust himself to them in a way he was unable to do as an infant, and is thereby cured. This process of cure is a long one, and cannot be considered a practical answer to the widespread incidence of homosexuality. Probably the main benefit in analysing these cases and the discovery of their causes is that we may find the means to prevent them.

APPLICATION OF ANTIBIOTICS (POLYBACTRIN) IN SURGICAL PRACTICE, USING THE AEROSOL TECHNIQUE

BY

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The occurrence of infection in elective surgical operations is a major clinical problem, varying in severity from place to place and from time to time. Most cases of this infection are due to a type of *Staphylococcus aureus* relatively resistant to penicillin, and, in recent years, increasingly resistant to the broad-spectrum antibiotics. Of the remainder, many are the result of infection by *Pseudomonas pyocyanea*, which is also resistant to most of the antibiotics in common use.

Increase in Resistant Strains

Barber and Rozwadowska-Dowzenko (1948) drew attention to the rising incidence of penicillin-resistant strains of *Staph. aureus* and reported that in a London hospital the incidence had risen from 14% in 1946 to 59% in 1948. Many similar reports have been published, and in the U.S.A. it is thought that 75–80% of staphylococcal infections in hospitals are caused by penicillin-resistant strains (Long, 1955; Spink, 1955). The high incidence is so far confined to in-patients, but there is some evidence that penicillin-resistant infections are also appearing with greater frequency among out-patients (Rees *et al.*, 1955). Persistent, hardy, and adaptable potentially pathogenic staphylococci are ubiquitous in the hospital environment and continue to produce strains resistant to the antibiotics most often used in clinical practice.

Many factors and circumstances are responsible for surgical sepsis. Busy operating theatres in use throughout the 24 hours, defective or outdated theatre and dressing-room ventilation systems, nasal carriers of resistant bacterial strains commonly found amongst hospital staff, unreliable methods of skin decontamination, the use of local vasoconstrictor solutions (adrenaline) for infiltration of the wound area, breaches of surgical technique; all these, in different places and in different circumstances of varying importance, may combine or permutate to increase the risk and incidence of surgical infection. In the last analysis, however, surgical infection is caused by the implantation of pathogenic organisms by aerial contamination, droplet spread, or direct surgical implantation into the exposed wound at the time of operation. While, obviously, the attack on sepsis in any particular surgical organization may be on one or all of the fronts mentioned above, the problem may not be soluble by attention to them.

One method of tackling the problem is by the use of topical antibiotics, to destroy or combat the pathogens as they are or may be, implanted in the wound at operation.

While "asepsis" in the strict etymological sense is an unattainable ideal, the practical aim must be the minimal bacterial contamination of a "clean" surgical wound.

It is probable that local conditions adverse to combating infections (dead tissue, adrenaline ischaemia, operating-time, foreign-body implants) are reasonably constant factors when considered in relation to a series of 250 neurosurgical operations such as are reported below. The dosage of contaminating pathogens is the variable and decisive factor. Unless this contamination can be controlled in some way, the case for a topical antibiotic is rendered mandatory. If the desirability of such a topical preparation is granted, it is important that the chosen preparation should neither sensitize patients nor favour the emergence of resistant strains.

For such a topical preparation a number of known antibiotics, too toxic for systemic use but with a wide range of effectiveness of action and negligible tendency to increase resistance, may be considered. Polymyxin, bacitracin, and neomycin, which are poorly absorbed into the body from "raw" tissue surface, have recently been prepared as an antibiotic triad ("polybactrin") for local use. The application of this combination requires special consideration on account of its relative insolubility and instability in aqueous solutions.

These difficulties have been overcome by suspending an intimate mixture of the antibiotics in an inert, highly volatile anhydrous liquid, "dichloro-tetrafluoro-ethane." The preparation is contained under pressure in a receptacle which permits "pushbutton" discharge of the antibiotic mixture as an aerosol. By this means the antibiotics can be dispersed evenly on any desired wound site. The high concentration and high bactericidal activity of the triad limits the risk of resistant strains emerging.

This antibiotic triad has recently been used in a clinical trial for the prophylaxis of surgical sepsis at the Department of Surgical Neurology in the Royal Infirmary of Edinburgh. The price paid for sepsis in Neurological Surgery, in terms of mortality, morbidity, and bed utilization, may be great, and any practical steps to limit or minimize its incidence are valuable.

Method

The antibiotic is released from its container by pressure on the releasing valve at its top. From a distance of 8–10 in. (20-25 cm.) the projected antibiotic triad is directed into the wound, care being taken to ensure even distribution. In this trial the wound was sprayed at each wound layer encountered on opening and closing. For example, during craniotomy the under surface of the scalp and the exposed pericranium were sprayed after reflection of the scalp flap: the bone flap, with its attached muscle, and the dura were sprayed when the bone flap had been elevated. On closure the order was reversed: firstly the dura, then the bone flap and muscle, next the pericranium and under surface of the scalp, and finally the wound edges, were treated after their approximation by deep galeal sutures.

In the case of spinal operations the deep fascia and muscle were sprayed during the opening, and the muscle, deep fascia, and skin edges during their closure.

Results

The technique outlined above has been used on 250 consecutive surgical cases over a period of approximately five months. The analysis of these cases is as follow :

Craniotomy with bone flap			52
Craniectomy	of posterior fossa	19	34
	of subtemporal region	11	
	others	4	
Prolapsed intervertebral disk (by fenestration operation, including a few reopenings for recurrent protrusion or protrusion at different levels)			73
Laminectomy (for spinal tumour, rhizotomy, etc.)			23
Neck operations (cervical sympathectomy, carotid ligation, etc.)			16
Multiple exploratory burr-holes			25
Hydrocephalus operations: ventriculo-jugular, ventriculo-peritoneal, and theco-peritoneal tube implantation operations			14
Burr-holes with ventricular drainage			5
Cranioplasty	Autogenous bone flap		5
	Prosthesis		2
Spinal bone graft			1

Incidence of Sepsis.—In this series of 250 cases septic complications were encountered in three cases. In only one instance was it of major importance, and this was in a case of cranioplasty where there were predisposing factors to the development of infection. The patient was a young man who had suffered a severe head injury with compound depressed fracture two years previously. Two attempts at cranioplasty following his injury had been made, and both failed because of sepsis. On this occasion tantalum repair was attempted, but again the prosthesis had to be removed on account of wound infection. The two remaining cases were examples of minor sepsis—a small stitch abscess in a subtemporal decompression wound and a superficial infection in a neck wound of a baby on whom a ventriculo-jugular shunt operation had been performed for hydrocephalus. The onset of sepsis in this latter case was preceded by mechanical wound disruption due to cerebrospinal fluid collection and there was also present in the wound a foreign body—the shunt tube of portex rubber.

Control Series

Analysis of several series, similar in number and range of cases, operated on at earlier periods in the same department under identical conditions but without the use of the local antibiotics, all showed a fairly constant incidence of sepsis. The 250 consecutive surgical operations immediately before the present investigation into the efficacy of polybactrin are reported below : .

Craniotomy with bone flap			49
Craniectomy	of posterior fossa	18	33
	of subtemporal region	12	
	others	3	
Prolapsed intervertebral disk (fenestration operation with a few reopenings)			87
Laminectomy (for spinal tumour, rhizotomy, etc.)			28
Neck operation (cervical sympathectomy, carotid ligations)			20
Multiple exploratory burr-holes			12
Burr-holes with ventricular drainage			3
Hydrocephalus operations: ventriculo-jugular, ventriculo-peritoneal, and theco-peritoneal tube implantation operations			10
Cranioplasty	Tantalum prosthesis	3	5
	Autogenous bone	1	
	Acrylic prosthesis	1	
Others			3

The incidence of major sepsis in this control series affected 18 cases (7.2%). Five were cases of craniotomy with bone flap, and the management of their infective complication required wound reopening and removal of the bone flap. Six cases were spinal operations for prolapsed intervertebral disk, and their infections required reopening of the wounds, drainage, and secondary suture. In addition, six craniectomy wounds were infected. The remaining infection occurred in a young man in whom cranioplasty had been carried out using an autogenous bone flap, and the graft had to be removed.

There were three cases of minor sepsis (stitch abscesses), which responded to simple measures of local treatment.

The organisms responsible for the infections in this series were for the most part *Staph. aureus* of the penicillin-resistant type ; one case (craniotomy with bone flap) was the result of gas-gangrene infection and two of the infected spinal wounds were caused by *Ps. pyocyanea.*

It should be added that the incidence of infection quoted in this control series (immediately preceding the test series), though sufficiently distressing, did not represent a particularly black period. While the surgical infection rate has varied, the series quoted is approximately average for the past two years. This incidence of infection persisted despite continual efforts by experienced surgeons to control it by other known means—for example, renovation of ventilation systems, revision of skin preparation technique, the checking of sterilizer efficiency, etc.

Possibly the incidence is connected with the crowded conditions of the department in question, the proximity of operating theatre suite to ward accommodation, etc. Be this as it may, the introduction of the polybactrin aerosol technique has abruptly and convincingly reduced the incidence of surgical infections.

No systemic toxic effects, no delay in wound healing, and no local toxic effects upon the brain, spinal cord, or nerves have been observed. As it was not possible to avoid surgically important infection in 7.2% of elective operations by all other known precautions, it is proposed to continue the employment of polybactrin aerosol technique in the department in question.

Summary

The use of the antibiotic triad polymyxin, neomycin, and bacitracin (polybactrin) applied locally to wound surfaces in the prophylaxis of surgical sepsis is described.

The preparation of the antibiotic and the technique for its proper application are discussed.

A clinical trial is reported in which this technique was applied in 250 consecutive neurosurgical operations. It is contrasted with a comparable series in which this antibiotic technique was not used.

The analysis showed a reduction in the incidence of major sepsis from 7.2% to 0.4% and in minor sepsis from 1.2% to 0.8%.

I am grateful to Professor Norman M. Dott, Mr. F. John Gillingham, and Mr. I. Macfarlane Murray. I thank Calmic Limited for the supply of polybactrin.

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The National Birthday Trust Fund last week gave a first showing of the second in the series of films which began with "My First Baby." The new film, entitled "Toxaemia of Pregnancy," was sponsored by Pfizer Ltd. and produced by Dr. and Mrs. W. A. Bullen, with the obstetric advice of Miss J. R. C. Burton-Brown. It gives a simple account of toxaemia, and advice on the way to lead a healthy life during pregnancy. Introducing the film, Professor R. J. KELLAR spoke of the value of what he called "briefing classes" in antenatal clinics. Absence of instruction increased fears in young pregnant women, who were happier and braver if they were given instruction. So far as toxaemia of pregnancy was concerned, it was essential to pay very great attention to the minor symptoms of the disease. After the film had been shown there was a lively discussion under the chairmanship of Professor J. C. McClure Browne. Mr. ARNOLD WALKER described the film as excellent "in accentuating points that matter in eliminating toxaemia."

CHRONIC POTASSIUM DEPLETION DUE TO PURGATION WITH CASCARA

BY

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Potassium depletion is well known as a complication of diarrhoea (Darrow, 1946), and it has also been described as a result of chronic abuse of purgatives (Schwartz and Relman, 1953) and following repeated enemata (Dunning and Plum, 1956).

We report here the case of a middle-aged woman who for at least five years had taken frequent large doses of cascara, and who finally was admitted to hospital because she had become too weak to walk or even to sit up.

Case Report

A married woman aged 55 was admitted to St. Mary's Hospital in August, 1955, complaining of weakness, diarrhoea, anorexia, nausea, and vomiting. She had long had osteoarthritis of her hips and knees, for which daily active exercises had been prescribed. One year previously she had been admitted to hospital for treatment of an acute episode of pyelonephritis. At that time one of her main complaints was of weakness, but no potassium studies were carried out. Following discharge she had been well and had had no urinary symptoms.

From 1950 onwards she had been in the habit of taking 10–15 gr. (0.65–1 g.) of cascara, and sometimes even more, usually about two or three times a week. In each following day, or two days, she would pass two to four copious fluid or semi-formed stools. If she had failed to pass a motion for 24 hours—and this was nearly always the case after the previous purgation had subsided—she repeated the dose of cascara. She had never seen blood, pus, or saline in the motions.

Fourteen days before admission she began to feel weak and was no longer able to perform her prescribed exercises. She said that from this time onwards she suffered from persistent diarrhoea, nausea, anorexia, and occasional vomiting. The history of diarrhoea is difficult to assess, since she continued to take her customary amounts of cascara no less often than before. She said that she passed seven or eight motions daily, ate little, and for two days before admission was so weak that she could scarcely walk.

Forty-eight hours before admission she left her bed to go to a commode which stood in her bedroom. When she got up from the commode the weakness was so extreme that she fell to the floor and had to crawl back to bed, into which her husband had to lift her. For about 24 hours before admission her mouth had been constantly dry and she had been extremely thirsty.

On admission she was pale and tired, and looked ill. The tongue was dry and furred, and the skin showed loss of elasticity. There was no fever, and the breathing was normal. She spoke with little modulation of voice, little facial expression, and no gestures. She lay supine and still in bed, because, she said, she was too weak to sit up. Her pulse was regular, 66 a minute, and her blood pressure 120/80. There were no abnormal physical signs in the heart, lungs, or abdomen. Rectal examination revealed nothing abnormal.

The cranial nerves were normal and there were no cerebellar signs. Her grip was equally good with both hands, and flexion of the elbows and dorsiflexion of the wrists were surprisingly strong. Her legs, however, were so weak that she was unable to lift them or to flex her hips. She was also unable to keep her legs raised if one or other of them was lifted from the bed, and they would fall immediately, flaccid and inert. Flexion of the knees was similarly weak, but dorsiflexion and plantar flexion of the ankles were normal for her age, as were inversion and eversion of the foot. The biceps reflexes were present, although sluggish, and the triceps and supinator reflexes were easily elicited. The knee reflexes were symmetrically equal, but the ankle reflexes were absent, even with reinforcement. A flexor plantar response was elicited, but the abdominal reflexes could not be obtained. Sensation, superficial and deep, was normal.

Investigations.—Hb, 11.9 g./100 ml.; W.B.C., 16,000/c.mm. (12,000 neutrophils); blood urea, 82 mg./100 ml. Plasma Na 141 mEq/l., K 1.7 mEq/l., Cl 111 mEq/l.; total CO_2, 18.6 mM/l.; total proteins, 5.5 g./100 ml. A catheter specimen of urine showed a heavy precipitate to the sulphosalicylic acid test for protein and a few pus cells in the centrifuged deposit, and on culture grew a few colonies of *Escherichia coli*. The urinary potassium on admission was 4 mEq/l., and during the first 24 hours in hospital she passed 1,400 ml. of urine, which had a specific gravity of 1008.

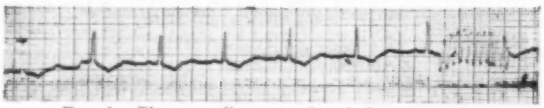

FIG. 1.—Electrocardiogram taken before treatment.

Electrocardiogram (Fig. 1) showed the sagged ST segments, wide inverted T waves, prolonged Q–T interval, and the U waves characteristically seen in hypokalaemia.

Treatment and Progress

The patient looked depleted of water and sodium, but the fact that she was passing reasonable volumes of urine of low specific gravity and had a normal plasma sodium made this diagnosis unlikely, and we thought that these appearances were due to gross potassium depletion, which can produce a similar clinical picture in some cases.

Replacement of potassium by intravenous drip was started immediately, using 4 g. (54 mEq) of potassium chloride in each litre of 5% dextrose in water. During the first few days this was the only infusion solution used. Metabolic balance studies were carried out from the beginning of treatment, and the results are portrayed in Fig. 2.

At the end of 24 hours' therapy she showed a dramatic improvement: she had by that time retained 148 mEq of potassium, and her plasma potassium had risen from 1.7 to 2.3 mEq/l. She talked with much greater expression and modulation of the voice and began to make gestures when she spoke. She was able to lift her legs off the bed and to keep them raised for about two seconds.

After 48 hours' treatment she had retained 212 mEq of potassium and her plasma potassium was 2.6 mEq/l. At this stage 8.7 g. of dipotassium hydrogen phosphate (100 mEq of potassium) was substituted for the potassium chloride in the drip because it was thought that in view of the potassium depletion a deficiency of phosphate might coexist. Within a few hours of receiving this she complained of tingling in the fingers, arms, and legs, with a return of lassitude. Next morning a considerable increase in tone of the muscles of the limbs was apparent: *main d'accoucheur* was present. In addition her blood pressure had fallen from 120/80 to 90/60. Plasma potassium at this time was 2.4 mEq/l., calcium 6.25 mg./100 ml., phosphorus (total) 7.4 mg./100 ml. Total CO_2 in an arterial blood sample was 18.7 mM/l. and the *p*H was 7.27. The E.C.G. showed no change.

It seemed likely that the infusion of phosphate, combined with the low plasma calcium, was responsible for her tetanic symptoms; the K_2HPO_4 was therefore discontinued

and 2 g. of calcium gluconate was added to the infusion fluid. A further 2 g. of calcium gluconate was given intravenously during the next 24 hours. Her condition remained unaltered throughout the day, but at one stage her B.P. fell to 70/30. On the following day her tetanic symptoms had almost completely disappeared, but she complained of a constricting retrosternal pain, unaffected by posture or breathing, with no radiation. Her B.P. at this time was 108/68 and the E.C.G. again showed no change. The pain lasted for about 24 hours, and thereafter her condition improved.

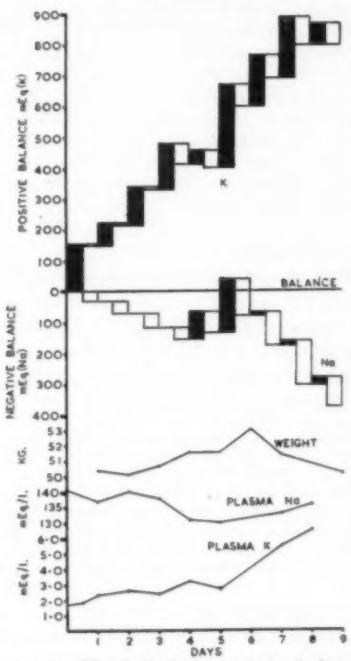

FIG. 2.—Metabolic balance study during potassium replacement. The intake (black areas) and output (white areas) of sodium and potassium in nine successive 24-hour periods are blocked on a common scale in which the cumulative balance of each is represented by the change of baseline. Below are plotted the changes in plasma sodium and potassium concentrations and the changes in weight over the same period.

On the fifth day after the beginning of treatment the plasma total CO_2 had fallen still further to 14.9 mM/l. (venous sample). We felt this fall in the plasma bicarbonate level might indicate the movement of hydrogen ions out of the cells which were taking up potassium; in other words, the converse of the process which has been postulated during the development of potassium depletion (Cooke *et al.*, 1952). We therefore gave 250 mM of sodium bicarbonate in isotonic solution (1.5 litres) during the next 48 hours, at the end of which her plasma total CO_2 had risen to 24.3 mEq/l.

After having had absolute constipation since the time of admission, in the 72-hour period from the fourth to the seventh day she passed several watery stools to a total volume of 1,990 ml. and containing 165 mEq of potassium. One of these specimens contained bicarbonate at a concentration of 68 mEq/l. The cause of this diarrhoea was never established, but there was a strong suspicion that it was due to purgatives obtained from an outside source. Culture of the stools failed to produce any pathogenic organisms.

Her course thereafter was uneventful, and nine days after treatment had started she had retained 795 mEq of potassium: her plasma potassium was 6.5 mEq/l., and in the last 24-hour period of the balance study she passed 1,000 ml. of urine, containing 44 mEq of potassium. The electrocardiogram had returned to normal (Fig. 3) and she felt perfectly well.

Estimations of the total body potassium and sodium were carried out during the course of the balance period, using radioisotopic dilution techniques. After 96 hours of treatment, when the potassium uptake was in total 413 mEq, the total body potassium was 1,518 mEq, suggesting that at the time of admission the total was approximately 1,105 mEq. On the eighth day of treatment the total body sodium was 1,745 mEq, whilst the balance figures showed an overall loss of 304 mEq. This would suggest an initial total body sodium of approximately 2,049 mEq.

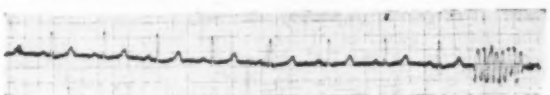

FIG. 3.—Electrocardiogram taken after treatment.

Subsequent Investigations

Barium enema and sigmoidoscopy performed after recovery showed no lesion of the large bowel. A catheter specimen of urine taken immediately after the completion of a six-day course of streptomycin, given in doses of 0.5 g. twice daily, showed only a slight excess of pus cells and was sterile on culture.

Ten months later she was readmitted for assessment. In the interval she had been well and had had no further urinary symptoms or episodes of weakness such as had led to her admission previously. Satisfactory bowel actions had been obtained by "milpar" (magnesium hydroxide and paraffin). Her plasma potassium was 3.75 mEq/l., sodium 138.5 mEq/l., chloride 107.5 mEq/l., and total CO_2 23.4 mM/l. Total plasma proteins were 6.5 g./100 ml. and N.P.N. 34 mg./100 ml. The urine contained no protein and no excess of leucocytes, and was sterile on culture. The 24-hour urine potassium excretion was 18, 31, and 31 mEq in three successive periods. To determine the effect of cascara on the excretion of potassium in the faeces, 15 gr. (1 g.) of cascara was given one evening. A specimen of stool obtained previously weighed 100 g. approximately, and contained 2.5 mEq of potassium, while 10 hours after cascara 450 g. of watery stool contained 30 mEq of potassium.

Discussion

On the basis of the clinical and biochemical findings, together with the response to specific therapy and the results of the balance studies, there can be little doubt that this patient's state was directly due to profound potassium depletion.

The hypothesis that the potassium loss was due to abuse of laxatives rests upon indirect evidence. It depends on the demonstration of normal renal function in respect of potassium conservation at the time of admission, and upon the history of diarrhoea and the excessive use of cascara. No pathogen was isolated from the stool, and the gut was normal to radiological examination subsequently, so that the aetiological role of cascara is likely.

In spite of an active renal infection and nitrogen retention, the patient for the first four days of admission excreted only 27.5 mEq of potassium in more than 5 litres of urine, whilst in the last two days of the balance studies, when the potassium depletion had been corrected, the urine potassium was about 40 mEq a day. It is possible that the kidneys had been responsible for the potassium loss, and that by the time of admission the depletion of this cation was so profound that little could appear in the urine. If this were so, the patient's condition would have represented "potassium-losing nephritis." However, the reported observations in this syndrome do not support this hypothesis, for in such cases urine potassium excretion has always been high in the face of hypokalaemia (Brown *et al.*, 1944; Burrows *et al.*, 1949; Earle *et al.*, 1951; Schoch, 1951; Darmady *et al.*, 1955). Indeed, the obverse of this proposition might perhaps be entertained—namely, that the potassium deficiency in this patient so damaged the kidneys that they were rendered susceptible either to a fresh infection or to an exacerbation of a smouldering chronic one. This possibility has been reviewed in other cases (Milne *et al.*, 1957).

The great increase in faecal potassium loss that occurred when the patient was given cascara is the strongest evidence in support of the hypothesis, and is the typical response of the bowel to conditions producing diarrhoea, as already demonstrated in infantile diarrhoea (Darrow, 1946), in cases

of purgative abuse (Schwartz and Relman, 1953), in subjects given large enemata (Dunning and Plum, 1956), and in steatorrhoea (Lubran and McAllen, 1951).

The radioisotope studies suggest that at the time of admission the total exchangeable potassium was approximately 1,105 mEq, and the total exchangeable sodium approximately 2,049 mEq. Moore *et al.* (1954), who combined their own data with those of Forbes and Perley (1951), concluded that in healthy adult males the total exchangeable potassium amounted to 46.3 mEq per kg. body weight, and the total exchangeable sodium to 42.1 mEq per kg. body weight. If due allowance is made for the smaller proportion of body water in the female subject, these figures would suggest that in this patient, who weighed 50.4 kg., approximately, the expected total exchangeable potassium would be of the order of 1,950 mEq, and the sodium approximately 1,750 mEq. The observed figures thus represent a gross deviation from the normal pattern, but in fact correlate well with the results of the balance studies during the period of electrolyte therapy. Over the nine days from the beginning of treatment the patient gained a total of 796 mEq of potassium and lost 376 mEq of sodium without concomitant changes in weight, although there was a slight fall in the plasma sodium level from 141 to 136 mEq/l. on the eighth day. This exchange would have returned her body fluid composition to a condition near normal.

It is of great interest that so far from being depleted of sodium at the height of her illness and diarrhoea she had, apparently, an excess of body sodium. It seems that this was not in the extracellular fluid but elsewhere, presumably in the cells, and was displaced by potassium when the latter was given. A similar negative sodium balance during the treatment of subjects deficient in potassium has been observed under experimental conditions by Black and Milne (1952). Schwartz and Relman (1953) describe observations similar to ours on two subjects who abused laxatives. They observed a transient increase of sodium uptake associated with a gain in weight, but the results on one of their patients at the end of a balance period, when the body weight had returned to its pre-treatment level, showed an overall loss of sodium in amounts comparable to that which we have observed.

The patient's complaint of thirst was interesting in view of the absence of biochemical evidence of water depletion, and this symptom was also prominent in the case of potassium-losing renal disease described by Mahler and Stanbury (1956). There is no clear evidence of the significance of this at the present time.

High plasma bicarbonate levels are sometimes found in cases of potassium depletion (Darrow *et al.*, 1948; Cooke *et al.*, 1952). Our patient, however, had an initial total CO_2 of 18.6 mM/l., due possibly in part to her renal lesion and, more probably, to high bicarbonate loss in the stools. During the episode of diarrhoea in hospital her faecal bicarbonate loss rose to levels of 68 mM/l., and there seems no reason to suppose that a similar loss did not occur before admission. Because of these two factors it seemed impracticable to carry out detailed studies of acid-base disturbance in this case.

The tetany which developed when K_2HPO_4 was given intravenously was thought to be a direct result of this infusion; at that time the plasma calcium was only 6.25 mg./100 ml. and the phosphate was 7.4 mg./100 ml. It was thus similar to that described by Davidsen *et al.* (1951), and differed from the tetany described by Fourman (1954a, 1954b) during potassium replacement therapy in experimental depletion, and by Fourman and McCance (1955) and Darmady *et al.* (1955) in cases of renal potassium loss. In these cases there was little change in the serum calcium, and the phenomenon was difficult to explain.

The muscular weakness with which the patient presented seemed remarkable in its distribution. The muscular power of the arms and hands seemed unimpaired, while that of the trunk and legs was so grossly diminished that the patient was unable either to sit up or to raise her legs from the bed: the patellar reflex was sluggish, and the ankle reflexes were absent. This local weakness has been described before in chronic potassium deficiency (Davidsen *et al.*, 1951) and an initially peripheral centripetal weakness is typical in the episodes of familial periodic paralysis (Ziegler and McQuarrie, 1952). However, potassium deficiency is usually described as producing a generalized lack of power, and it is perhaps worth stressing the disparity in the weakness of the upper and lower limb muscles in this case.

In conclusion, considering the vast scale on which purgatives are used, it is pertinent to wonder how commonly the state of affairs described in this paper occurs, at least in some degree. The observations lend an ironical twist to the widespread belief that regular medication for the bowels promotes vigour, well-being, and strength.

Summary

A case of severe potassium depletion in a middle-aged woman is described.

The results of balance studies carried out over a nine-day period are reported.

Reasons are given for regarding this potassium depletion as due to the habitual abuse of cascara.

Our thanks are due to Dr. C. A. Young for permission to publish this case; to Professor Sir George Pickering and Dr. V. Wynn for criticism and advice; to Mr. R. P. Ekins, of the physics department, Middlesex Hospital Medical School, for the radioisotope measurements; and to the staff of the Surgical Unit Laboratory, St. Mary's Hospital, for the chemical analyses. In particular we would like to record our gratitude to Professor C. G. Rob and Dr. V. Wynn for provision of facilities for this metabolic study.

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"Dr. Zworykin's laboratory at the Institute is also at work on the applications of an ultraviolet colour translating television microscope developed at the Medical Electronics Centre. The primary objective of this device is to be able to observe living systems microscopically, 'staining' them electronically by a suitable choice of ultraviolet frequencies. Three different wavelengths of ultraviolet light, passed through the sample and differentially absorbed by the components of the tissues observed, are converted arbitrarily to three different visible colours—red, blue, and yellow—and displayed on a colour television tube. By choosing frequencies that are sufficiently absorbed by certain of the components of living cells the movement and distribution of these components into, within, and out of the cell can be observed. The process has already been shown to be workable, though details remain to be worked out. If current attempts are successful to control precisely the relative intensities of the various frequencies, as they are projected on the T.V. screen, it may become possible to make quantitative analysis of the chemical composition of individual cells."—*The Rockefeller Institute Quarterly* (Spring, 1958).

FURTHER EXPERIENCE WITH THE "LENTE" INSULINS

BY

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The initial investigation into the use of insulin-zinc suspensions in the diabetic clinic of the Victoria Infirmary, Glasgow, suggested that these insulins possessed certain advantages over protamine-zinc and globin insulins (Murray and Wilson, 1953), an opinion which coincided with that of other workers in this country (Lawrence and Oakley, 1953; Nabarro and Stowers, 1953; Oakley, 1953; Venning, 1954). Since insulin zinc suspensions became generally available late in 1953 they have been widely used, and several reports based on studies extending over prolonged periods have appeared (Gurling *et al.*, 1955; Stowers and Nabarro, 1955; Jersild, 1956; Spencer and Morgans, 1956). These have in general confirmed the original views of their value. The results reported by Jersild were particularly excellent, since he obtained control with a single daily injection in 96% of patients, and in the remainder two doses a day of I.Z.S. proved satisfactory. However, although we have used these insulins extensively for five years and have found them generally satisfactory, our experience has shown that in certain cases they have given poor control, or have failed entirely. It was therefore decided to examine our results in some detail and compare them with those of other workers.

Method of Investigation

A survey of out-patients attending the diabetic clinic during 1956 showed that 335 of these had been treated with insulin zinc suspension for a period of at least six months. Of these, 134 were "new" patients who had never previously taken insulin, and 201 "old" patients all of whom had been treated with some other insulin before receiving I.Z.S. The age and sex distribution is shown in Table I. None was obese; all were of the insulin-deficient type liable to ketosis, and 60% of the "old" patients had been diabetic for more than five years. All the patients had been instructed in a prescribed diet with carbohydrate adjusted to individual requirements. Frequent urine tests were made by patients, generally with "clinitest" tablets. Considerable reliance was placed on the patient's own record of these tests, carried out from time to time before each of the main meals of the day, but tests were made at the clinic on each attendance, when frequently blood-sugar estimations were also made.

TABLE I.—*Age Distribution. (Numbers of female patients are given in parentheses)*

Age Groups:	5–20	21–30	31–40	41–50	51–60	61–70	Over 70
New patients ..	14 (5)	15 (7)	21 (7)	15 (11)	29 (12)	22 (20)	18 (9)
Old	19 (9)	26 (17)	22 (11)	32 (12)	41 (25)	47 (25)	14 (13)

Since 1953 all new patients requiring insulin have been started with I.Z.S., with the exception of those found on first examination to have considerable ketosis. The latter were generally treated initially with multiple doses of soluble insulin, but as soon as ketosis was overcome I.Z.S. was begun. "Old" patients were normally continued on their existing regime if this appeared to be quite satisfactory, and were transferred to I.Z.S. only for some definite reason, such as troublesome allergic reaction at the site of insulin injection. Sometimes I.Z.S. was tried in the hope that better control might be established where this was unsatisfactory. Occasionally change to I.Z.S. was made in a patient taking a mixture of soluble and protamine-zinc insulins with a view to eliminating the trouble of making a mixture in the syringe, although this of course could be helpful only when I.Z.S. alone, without admixture with I.Z.S. amorphous or I.Z.S. crystalline, proved effective.

The assessment of the degree of diabetic control in a patient presents difficulties, and no entirely satisfactory method has been devised. Gurling *et al.* (1955) have used as the basis for classification the three factors: (1) degree of night control as judged by early morning urine tests; (2) day control as shown by the blood-sugar level before mid-day; and (3) satisfactory maintenance of weight. We have used similar if perhaps rather stricter criteria, as follows:

1. *Excellent Control.*—Urine tests at all times of day "blue" or occasionally "green," forenoon blood sugar not exceeding 200 mg./100 ml., no insulin reactions, weight constant.

2. *Good Control.*—As above except for occasional "yellow" test, occasional elevated blood sugar, and perhaps the occurrence of mild but infrequent insulin reactions.

3. *Fair Control.*—Urine tests mainly "blue"/"green" but frequently "yellow" at some time or other in the day. Blood sugar before mid-day commonly less than 200 mg./100 ml., but sometimes exceeding this level.

4. *Poor Control.*—Tests generally "yellow" or "red" but "blue"/"green" at times. Blood sugar variable. Liability to insulin reactions, occasionally severe.

5. *Bad Control.*—Urine tests bad. Blood sugar always over 200 mg./100 ml. Readily liable to ketosis or hypoglycaemia.

Results in New Patients

It is generally recognized that new patients respond well to treatment and that with the older types of insulin they were often well controlled, at least in the early stages. We have not attempted to estimate the relative efficiency of the old and newer insulins in the treatment of new patients, but simply report results obtained in 134 cases. Excellent control was estimated in 36 (26.5%), good in 75 (56%), fair in 15 (11.5%), poor in 7 (5.2%), and bad in 1 (0.8%). Taking the first two degrees of control together, it will be seen that very satisfactory results were obtained in 82.5% of these patients. A single daily injection of unmodified I.Z.S. proved adequate in 121 (90%) cases, while 9 (7%) required relatively more I.Z.S. amorphous, and 4 (3%) relatively less. There was much variation in the size of dose required. In 107 (80%) patients this did not exceed 40 units; but 22 (16%) needed 40–80 units, while 5 (4%) had doses ranging up to 120 units daily. No correlation was found between the degree of control obtained and the individual variations in the proportions of I.Z.S. amorphous ("semilente") and I.Z.S. crystalline ("ultralente"), with the size of the dose, or with the age of the patient.

Results in Old Patients

In Table II the degree of diabetic control existing in 201 old patients prior to transfer to I.Z.S. is contrasted with the state of control thereafter. The number showing excellent or good control was increased from 68 to 130 (64.7%).

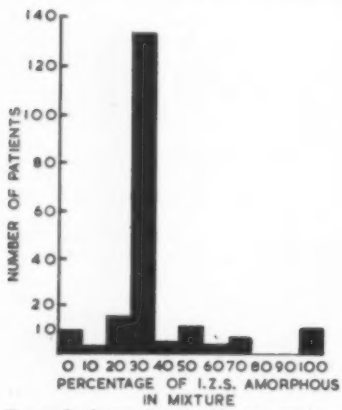
TABLE II.—*Degree of Control of "Old" Patients with I.Z.S. Contrasted with Degree of Control on Previous Insulin*

Previous Control		Control with I.Z.S.				
		Excellent	Good	Fair	Poor	Bad
Excellent ..	8	*8*	—	—	—	—
Good	60	13	*40*	4	2	1
Fair	79	5	37	*32*	5	—
Poor	37	—	20	8	*9*	—
Bad	17	1	6	4	—	*6*
	201	27	103	48	16	7

TABLE III.—*Dosage of I.Z.S. Relative to that of Previous Insulin*

Diabetic Control	Dose of I.Z.S. Relative to that of Previous Insulin			Total
	Same	Increased	Decreased	
Improved ..	29 (30·8%)	39 (41·6%)	26 (27·6%)	94 (100%)
Equal ..	34 (35·8%)	47 (49·5%)	14 (14·7%)	95 (100%)
Worse ..	2 (16·7%)	10 (83·3%)	—	12 (100%)
Total ..	65 (32·3%)	96 (47·7%)	40 (20%)	201 (100%)

Improvement was noted in 94 patients (46.8%), and in approximately the same number the degree of control was unaltered, although in eight of these control had been so excellent that further improvement could not be expected. Six cases, however, previously bad, continued so with I.Z.S. These were unstable diabetics who had eventually to resume multiple injections, and were regarded as failures with I.Z.S. It will also be seen that in 12 other patients control is recorded as worse after changing to the newer insulin.



Type of mixture (expressed as percentage of semilente insulin) used in "old" patients. 0% = ultralente. 30% = lente. 100% = semilente.

For the 189 patients shown as retaining equally good, or obtaining better, control the dose of I.Z.S. was greater than that of the former insulin in 86 cases, but in 40 a smaller dose sufficed (Table III). Where the dose had to be raised the increase was commonly (74% of cases) about 50%. Some, however, required as much as double the former dose. I.Z.S. alone was found suitable in 68% of patients (see Chart), the remainder obtaining the best results on a regime varying from I.Z.S. crystalline alone, through various combinations to I.Z.S. amorphous alone. Such variations in dosage and in the amorphous and crystalline proportions occurred irrespective of the degree of control exerted by the previous insulin, and were noted in patients of all groups. Neither the age of the patient nor the duration of the diabetes appeared to affect the nature of the response to transfer to I.Z.S.

Failures

We have not included in this study a few cases in which immediate deterioration in control after transfer led to abandonment of I.Z.S. at the patient's request, since with persistence and adjustment of dosage satisfactory results might have been obtained. Only patients maintained on I.Z.S. for at least six months are considered. As mentioned above, after transfer to this insulin control was regarded as worse in 12 cases, and these, together with the six unstable diabetics for whom it was found unsuitable, might be regarded as "failures." In three of the former, however, I.Z.S. was not discontinued, as it seemed on the whole preferable.

From Table II it will be seen that, of 60 patients classified as having good control on the previous insulin, seven are shown as having poorer results with I.Z.S. In one of these serious deterioration occurred but was coincident with the development of severe thyrotoxicosis. Of the two whose control became poor, one developed pulmonary tuberculosis soon after the change of insulin was made, while the other suffered from frequent insulin reactions and seemed to be better after changing back to a mixture of protamine-zinc and soluble insulins. The other four patients showed only slightly inferior control, and are classified as fair. One of these seemed to be more than compensated by the relief from local allergy previously troublesome, but in the other three I.Z.S. had to be abandoned. Great variability in the intensity of the diabetes in one patient rendered a single injection a day unsuitable, while in another case mammary carcinoma and physical deterioration developed after transfer to I.Z.S. A third patient complained of more frequent reactions, and reverted to his former insulin.

Fair control existed before changing to the new insulin in 79 patients, but in five this subsequently became poor. One of these was found to have contracted pulmonary tuberculosis. In two cases insulin reactions appeared to be more frequent and more severe, and the previous regime was preferred. The other two patients, however, were emotionally unstable individuals in whom the poorer state of control did not seem attributable to the change in the type of insulin, and in these the use of I.Z.S. has been continued. In this series of 201 old patients, therefore, the use of I.Z.S. has been continued in all except 15.

Insulin Reactions

It is difficult to make a comparison of hypoglycaemic attacks before and after transfer to I.Z.S., as other causative factors may be operative. Some patients, however, did complain that such attacks became altered in character, tending to come on with little or no premonitory symptom, and this led to reversion to their previous type of insulin in the four cases mentioned above. Local allergy at the site of injection was much less. It was on account of this trouble that 27 of the old patients previously treated with protamine-zinc insulin, alone or in combination with soluble insulin, were changed to I.Z.S., and 23 of these obtained complete relief, while improvement was noted in the remaining cases. Nevertheless, in three patients fat atrophy at the site of injection occurred.

Lapse from Control with I.Z.S.

The appearance of intercurrent disease is, of course, likely to upset diabetic control, and, as recorded above, the development of tuberculosis and thyrotoxicosis resulted in such disturbance that I.Z.S. had to be abandoned. However, even minor infections with which the experienced diabetic was accustomed to deal by temporarily increasing the dose of insulin appeared to cause more trouble to patients taking I.Z.S. Larger increases of dose seemed necessary, but, even with this, diabetic control was often difficult to re-establish, and this disturbance was apt to persist for a longer period. In cases of any severity additional doses of soluble insulin were required, but after recovery it was generally possible to return to approximately the same dose of I.Z.S. as previously. When insulin requirements rose with the onset of menstruation this could be met usually by increasing the dose of I.Z.S. by from 10% to 20% for a few days.

Discussion

Examination of the results obtained with insulin-zinc suspensions show that very satisfactory control was obtained in 82.5% of new patients but only in 64.7% of patients previously treated with some other type. There is little to be deduced from this apart from the well-recognized fact that in the initial stages diabetes is generally less difficult to control. On the other hand, a large number of the old patients were transferred to I.Z.S. because of some dissatisfaction with the control obtained with the previous regime, and the high proportion of these who did respond well thereafter may be regarded as satisfactory. Other workers in this country have selected the patients to be changed to I.Z.S., and, since the proportion of "difficult diabetics" in various series studied must vary to some extent, exact comparison between our results and those of others may well be inaccurate. The good results we obtained in 64.7%, however, are to be compared with those of Gurling *et al.* (1955), who obtained good control in 53% of 269 adult old patients,

and of Spencer and Morgans (1956), who obtained satisfactory control in 83% of cases.

Jersild (1956), reviewing 1,000 patients, found satisfactory control in 96% with a single injection daily of I.Z.S. and with two injections in the remainder. His patients, however, did not form a group comparable to those of our series or those of the other workers we have cited. Of the 1,000 patients studied the proportion of women aged 50–70 was relatively high and most of these patients were overweight. Spencer and Morgans pointed out that in the assessment of a new form of treatment of diabetes long and varied experience is necessary, but, in addition, it would seem essential, in comparing the results of different observers, that the type of patient, the duration of diabetes, and the criteria of diabetic control should be defined. Improvement in diabetic control might in fact be due to other factors after transfer to the new insulin, since, knowing that in the assessment of the value of the new insulin study would be made of his record of urine tests, the patient might take better care with diet. As, however, observations were made in each case for a minimum of six months, and in many cases much longer, it seems probable that improvement can generally be credited to the insulin. Improved control was noted in 46.8% of our cases. Other workers have reported improvement—Gurling *et al.* in 32% of cases, Spencer and Morgans in 36%, and Stowers and Nabarro in 80%.

The dose of I.Z.S. required was much larger than that of the previous insulin in 47.7% of cases. The explanation of this increase in some patients taking protamine zinc insulin was that the occurrence of hypoglycaemia in the early morning limited the dose despite relatively poor diurnal control, while the more even effect of I.Z.S. permitted a larger dose, with resultant improvement throughout 24 hours. A smaller dose sufficed in 20% of patients. In many cases this was accounted for by lessening local allergy, with diminished tendency to "insulin lumps" and consequently improved absorption. I.Z.S., with its proportion 3:7 amorphous/crystalline I.Z.S., proved satisfactory in 76% of our cases (in 90% of new and 68% of old patients). In the remainder better results were obtained with the two components in different proportions or, in a few cases, with one or other of these alone. Both Stowers and Nabarro (1955) and Jersild (1956) also found that alteration in the proportions was sometimes desirable, although the former were satisfied with I.Z.S. in 83.5% of cases, and the latter in 74%.

Many workers, however, appear to rely on I.Z.S. alone and have encountered difficulty in some cases with hypoglycaemia, particularly in the late afternoon, while at other times glycosuria might be considerable. Marble (1957), for example, has noted this so often that he recommended that patients with I.Z.S. should have an extra meal in the afternoon. It has always been our endeavour to prescribe the meals so far as possible according to the patient's taste and habit and to avoid the necessity of compelling him to eat at unusual hours. By altering the proportions of the more rapidly acting I.Z.S. amorphous and the slower-acting I.Z.S. crystalline it is often possible to obtain satisfactory control while avoiding hypoglycaemic episodes.

I.Z.S. (lente) was discontinued in 15 of the 201 old patients. In four cases the reason for this was that hypoglycaemic episodes became worse and in several instances seemed to occur with less premonitory symptoms. The development of serious intercurrent disease in three patients resulted in the poorer control which might have occurred whatever type of insulin had been used. However, Stowers and Nabarro have drawn attention to the danger, when using I.Z.S., of lapse from control in the presence of intercurrent infection and pointed out that in such circumstances the dose must be increased more boldly than in the case of other insulins. Our experience fully confirms this observation, and we have frequently had to advise patients, on finding diabetic balance upset, to take one or more injections of soluble insulin later in the day in addition to their usual morning dose of I.Z.S., rather than to attempt to obtain control simply by an increase of dose of the latter insulin. No explanation has been given for this peculiarity with I.Z.S., but we suspect that it concerns the crystalline element rather than the amorphous. The following case report illustrates this.

A man aged 62, diabetic for 14 years, having excellent control with a mixture of 16 units of I.Z.S. amorphous and 24 units of I.Z.S. crystalline, sustained a wound of the arm which became septic. He had had previous experience of upset of control by intercurrent infection, and of his own accord, finding urine tests had become poor, increased his dose to 20 units of I.Z.S. amorphous and 52 units of I.Z.S. crystalline (thereby taking a mixture which is virtually 72 units I.Z.S.), but with no apparent benefit. On changing to 40 units of I.Z.S. amorphous in the morning and 20 units of I.Z.S. amorphous in the evening excellent control was at once re-established. After a few days he tried a single injection, taking 20 units of I.Z.S. amorphous and 48 units of I.Z.S. crystalline, but urine tests immediately became bad, again to become satisfactory on resuming the two doses of I.Z.S. amorphous. One week later, when the arm was healing, he was able to revert to his original mixture.

This case demonstrates a practical feature in the use of the insulin zinc suspensions. When I.Z.S. proves inadequate we prescribe I.Z.S. amorphous and I.Z.S. crystalline, and instruct the patient in the amount of each which he should take mixed in the syringe. Should he lapse from control this mixture taken in the morning can be reinforced by an injection in the evening of I.Z.S amorphous, which he has available, and on subsequent days he should rely on the latter alone, taken morning and evening, till the emergency has passed. If he is in the habit of taking I.Z.S. he is probably best advised, while continuing his usual morning dose of this, to supplement it with two or more injections of soluble insulin, being guided by urine tests.

Summary

A review has been made of 335 diabetic patients treated for at least six months with I.Z.S. Satisfactory control was obtained in 82.5% of 135 new patients, and in 64.7% of 201 patients previously receiving some other form of insulin. In 94 of the latter I.Z.S. produced a better degree of control. I.Z.S. proved unsatisfactory in 15 patients.

In the presence of intercurrent infection lapse from diabetic control with I.Z.S. appears to occur more readily than with some other insulins. It is suggested that in such circumstances it is I.Z.S. crystalline which becomes relatively ineffective, since transfer temporarily to two injections a day of I.Z.S. amorphous has been shown to re-establish control.

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The Clean Air Act came into force on June 1, making it a punishable offence to emit dark smoke from any chimney in England and Wales. The ban applies to all buildings and also to railway engines and ships, but it will chiefly affect industrial and commercial premises. The Act requires steps to be taken to reduce grit and dust emissions from industrial chimneys. The Ministry of Housing and Local Government has prepared a memorandum on the industrial provisions of the Act and their administration (H.M.S.O., price 1s. net). The memorandum, which has been circulated to local authorities, deals with the following subjects: dark smoke, grit and dust, smoke nuisance, railway engines, and ships. Under each heading the relevant part of the Act is quoted, followed by comment on its administration.

ACUTE DISTENSION OF AFFERENT LOOP AFTER POLYA GASTRECTOMY

BY

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Acute distension of the afferent loop is a rare complication of Polya gastrectomy which has always been attributed to an organic obstruction at the stoma. In some cases the nature of the obstruction has been clearly demonstrated. Thus, acute angulation at the stoma may arise from displacement of the afferent loop either behind the efferent loop (Quinn and Gifford, 1950) or in front of it (West, 1953), or from volvulus of the anastomosis (Hoyte *et al.*, 1957).

In the few reported cases which have arisen in the early post-operative period the cause of the distension has not been so convincingly shown. Wangensteen (1941) described a case in which a patient died on the second day after operation, and in which no causal obstruction was found at necropsy, although he later suspected that there may have been kinking at the anastomosis from a slight forward rotation of the afferent loop. Henson (1955) reported a case which developed on the sixth day after a Polya–Hofmeister–Finsterer operation and wrote: "The obstruction appeared to be at the valve and due to occlusion of the jejunum from without by the closed portion of the cut end of the gastric remnant." Simon (1956) also described a case, developing on the eighth day, which he attributed to angulation of the afferent loop at the stoma. Two further cases which arose even earlier after operation are reported for two reasons: there was no definite organic obstruction at the stoma, and the clinical features differed from those of cases previously reported.

Case 1

A frail man of 50 with inactive tuberculosis of the lumbar spine and right hip-joint underwent a short-loop Polya antecolic isoperistaltic (afferent loop to lesser curvature) partial gastrectomy, with full-length anastomosis, for chronic duodenal ulceration with pyloric stenosis. On the first day after operation he took 570 ml. orally and 608 ml. was aspirated from a Ryle tube left in the gastric remnant. On the second morning 300 ml. was taken and 100 ml. aspirated; bowel sounds were present, and the nasal tube was withdrawn; he passed a loose motion the same evening. His pulse rate, however, had by then gradually risen from 88 immediately after operation to 120. On the third morning he deteriorated abruptly, the radial pulse becoming imperceptible and blood pressure unrecordable. He was pale and rational, and complained only of extreme exhaustion. There was no pain or vomiting and the abdomen was neither rigid nor distended. The plasma non-protein nitrogen had risen from 38 mg./100 ml. pre-operatively to 165 mg. (normal range 20–40 mg./100 ml.); the plasma sodium had fallen from 136 to 125 mEq./l. (normal range 138 ± 5). There was therefore evidence of considerable dehydration and sodium depletion. The plasma amylase was 320 Somogyi units/ml. (normal range 0–160) and the electrocardiogram was normal.

In the absence of any physical signs a provisional diagnosis was made of leakage from the duodenal closure. A nasal tube was passed and continuous suction applied. Plasma and oxytetracycline were given intravenously, and streptomycin and chloramphenicol intramuscularly. Two hours later slight abdominal distension was evident and *x*-ray examination showed moderate distension of many loops of small bowel and also subphrenic gas, the latter being of doubtful significance in view of the recent laparotomy. After receiving 3,600 ml. of plasma in 5½ hours he improved, the pulse rate falling to 100 and blood pressure rising to 130/110 mm. Hg. Twelve hours after his initial collapse he deteriorated again, his blood pressure falling to 70/40 mm. Hg and pulse rate rising to 116. The abdominal distension had increased considerably.

Under general anaesthesia the abdomen was reopened. There was a small amount of clear free fluid in the abdomen and no evidence of leakage from the duodenal stump or the anastomosis. The gastric remnant appeared normal, but there was gross distension of a normally placed viable afferent loop; its mesentery was thick with oedema. No obstruction to this loop at the stoma was evident from without, but, presumably from its downward drag, there was tilting of the anastomosis, with consequent angulation, and perhaps obstruction, of the efferent loop. Unhappily, the Ryle tube was in the oesophagus. A stomach tube passed orally was guided by the surgeon into the afferent loop and 700 ml. of turbid fluid was aspirated. A Ryle tube was left in this loop and a jejunostomy was made in the efferent loop. He survived operation by about 15 minutes.

Necropsy (Dr. M. E. H. Halford).—There was no peritonitis and the gastric remnant was normal. The duodenal closure was intact, but the whole duodenum was dilated, as was the proximal loop of the anastomosis, which was viable and normal in position. The remainder of the small intestine was moderately distended. From within, the anastomosis showed an unexpected degree of oedema. Tuberculosis was found in the right kidney and both epididymides. The left kidney was enlarged and otherwise normal. The lungs showed scarring but no active tuberculosis. The brain was normal.

Cause of Death.—Dehydration and sodium depletion may well have contributed to the shock, but rapid correction of the blood chemistry led only to transient improvement; hence distension alone was almost certainly the major factor. This mechanism has been demonstrated experimentally by Taylor *et al.* (1933), who showed, in the dog, that distension of the proximal intestine to 100 mm. Hg without obstruction led to prostration within a few hours and death, usually within 24 hours, in the absence of a significant fall in the plasma chloride level or interference with the blood supply of the gut. In contrast, denervation of the loop before distension was associated with no ill-effects for the first 48 hours, the animal becoming ill only with the development of peritonitis due to the experimental method.

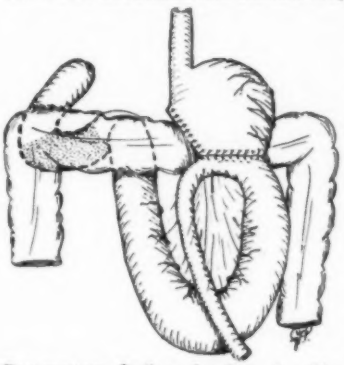
Case 2

A robust man of 36 underwent partial gastrectomy of similar type to that in Case 1, but with a half-length stoma, also for chronic duodenal ulceration with pyloric stenosis. Preliminary investigations included normal chest *x*-ray examination and normal estimations of his haemoglobin, blood urea, serum proteins, and serum chlorides. He was well until the second post-operative day, when his pulse rate rose from 84 to 104, and the abdomen became slightly distended. His intake by mouth was 300 ml. of water, and 350 ml. was aspirated through his Ryle tube. On the third day he became anxious and restless; the distension increased, although occasional high-pitched bowel sounds were heard; his oral intake was 375 ml. and 510 ml. was aspirated. On the fifth day the Ryle tube was removed, as only 29 ml. had been aspirated in the previous 12 hours, against an intake of 660 ml. He passed a loose motion, but remained distended and very restless. On the seventh day a light diet was started and three loose motions were passed.

On the eighth day he deteriorated rapidly after complaining of diffuse abdominal pain for the first time. His pulse rate rose again from 86 to 100, and his systolic blood pressure fell to 60 mm. Hg. There was no vomiting, but a Ryle tube was passed and 126 ml. withdrawn. His serum

amylase was 400 Somogyi units/ml. A diagnosis of diffuse peritonitis was made, penicillin and streptomycin were given intramuscularly, and under general anaesthesia the lower part of the abdominal incision was opened. The operation was limited to the insertion of a finger into the peritoneal cavity, and about 600 ml. of bile-stained fluid was released which yielded *Proteus vulgaris* and *Escherichia coli* on culture. Deterioration continued and he died 18 hours later.

Necropsy (Dr. J. Guy).—The abdomen contained a large volume of bile-stained pus. Loops of distended small intestine were bound together with purulent fibrinous exudate. The whole duodenum and afferent loop were grossly dilated. The third part of the duodenum, where its distension was maximal, showed infarction, which ceased abruptly in the middle of the fourth part (see Fig.). The retroduodenal vessels were thrombosed. The duodenal closure and the anastomosis were intact, and no mechanical obstruction of the afferent or efferent loops was evident on external and internal examination. The gastric remnant was not distended and the stoma was widely patent. The pancreas was normal. The cranial cavity was not examined.



Post-mortem findings in Case 2. The duodenum and afferent loop were greatly distended. The stippling shows the zone of duodenal infarction.

Cause of Death.—The duodenal infarction may be explained by the work of Dragstedt *et al.* (1929), who showed that the duodenum in the dog is more vulnerable to infarction from raised intraluminal pressure than any other part of the intestine. Eisberg (1925) showed that in the small intestine of the dog the vasa recta pierce the muscularis shortly after leaving the mesentery, while in the large intestine they pierce the muscularis nearer the antimesenteric border. Dragstedt *et al.* (1929) confirmed this work and showed that the vessels pierce the muscularis in the duodenum even earlier than in the jejunum. They accordingly suggest that the longer the vessels remain superficial in the wall of the bowel the better is it able to withstand distension. Similar considerations may apply in man.

Aetiology

The absence of a mechanical displacement of the afferent loop with consequent obstruction at the stoma has been emphasized in both cases. Both operations were completed without technical doubt or difficulty and with minimal "turn-in" of bowel wall. Oedema at the suture line may have caused some degree of obstruction in the first patient, who died on the third day, but in Case 2 there was no evidence of obstruction at the stoma, although the distension was sufficient to cause duodenal infarction. There may, however, have been marked initial oedema which provoked the distension and then subsided. But atony alone from denervation must be considered because some vagal fibres are always divided on section both of the stomach and of the duodenum. Indeed, to this Roux *et al.* (1950) attributed, with due anatomical evidence, chronic distension of the afferent loop and bilious vomiting.

A further feature of both cases was generalized ileus: in Case 1 it was moderate in degree and did not become evident until several hours after the onset of shock, which is believed to have arisen reflexly from distension of the afferent loop. Perhaps the ileus had a similar reflex origin, either by an entirely nervous route or through the medium of an irritant peritoneal exudate. In Case 2 the ileus was severe from the second day, although, untreated with antibiotics, he appeared too well for any serious suspicion of peritonitis, nor was any source for an early peritonitis found at necropsy after his sudden deterioration and death with duodenal infarction on the ninth day. Perhaps it had a common origin with the afferent-loop distension from a more extensive division of the vagus, for paralytic ileus is an accepted complication of formal vagotomy.

Reference must also be made to the use of clamps. Burge (1956) attributes paresis of the jejunal loop, and consequent failure of the gastric stump to empty, to inclusion of its mesentery in a clamp. W. M. Capper (1957, personal communication), with similar suspicions, avoids altogether the use of clamps at gastrectomy. In Case 1 clamps were not used; in Case 2 a light Carwardine clamp was placed across the gastric remnant and a similar clamp may have been used on the jejunum, possibly including its mesentery. Atony can no more be attributed to a single cause in the afferent loop than in the gastric remnant, where it is common. An adverse factor in the afferent loop must be the slow accumulation of bile and pancreatic juice, although the volumes secreted immediately after partial gastrectomy are less than the normal total of 1,500 ml. a day (T. J. Butler, 1957, personal communication). Perhaps gradually increasing distension from this cause prevents spontaneous recovery from an atony which would otherwise have been transient.

Clinical Features

Henson's (1955) patient, a woman of 35, was well until the sixth post-operative day, when she developed severe abdominal colic without vomiting. Anxiety developed, there was a raised pulse rate, and a tender resonant swelling was present in the left upper quadrant. *X*-ray examination confirmed this to be a distended loop of small intestine. Simon's (1956) patient, a man of 57, developed abdominal pain, vomiting, and distension on the eighth day. A tender mass was felt in the right upper abdomen, but *x*-ray examination showed no abnormality. In both these cases the diagnosis was suggested by the symptoms and signs, and surgical treatment was effective. In the present two cases the clinical clues were minimal, for there was neither pain nor vomiting. In Case 1 the only symptom was exhaustion, and there were no abdominal signs until diffuse distension developed a few hours after the onset of severe shock. In Case 2 restlessness, abdominal distension, and slight diarrhoea preceded collapse on the eighth day.

The case for a reflex origin of these symptoms and signs from a distended afferent loop appears to be strengthened by the observations of Henson (1955), who examined the records of eight cases of duodenal leakage and found that, with the exception of one case of early rupture, all the patients showed slight but definite signs of "some preliminary disorder," which he thought was possibly related to obstruction of the afferent loop before actual leakage began. The absence of hyperpyrexia is also of interest. Wangensteen's patient died with hyperpyrexia two days after Polya gastrectomy for carcinoma, and at necropsy dilatation of the proximal loop and the duodenum was found. He accordingly obstructed the duodenum in the dog by severing the pylorus and occluded the jejunum a short distance beyond the duodeno-jejunal flexure. Death with hyperpyrexia was a uniform finding. In man, however, hyperpyrexia has not been described even in cases in which afferent-loop obstruction was clearly of the closed-loop type.

Diagnosis

Even in retrospect accurate diagnosis was difficult in the cases described, with their vague symptoms, limited signs, and negative investigations. It is not possible to define clinical distinctions between afferent-loop ileus and other complications such as peritonitis from duodenal leakage, acute pancreatitis, and acute intestinal obstruction of

mechanical origin. Indeed, attempts at a more accurate diagnosis, if they lead to delay, are misplaced, as urgent surgical relief is required in all these conditions except acute pancreatitis—and even this, after Polya gastrectomy, needs confirmation by laparotomy, because marked elevation of the serum amylase is not diagnostic. High levels may occur with duodenal leakage and with closed obstruction of the afferent loop.

Treatment

Urgent evacuation of the distended afferent loop is essential. The passage of a nasal tube might possibly achieve it, but, failing this, operation is indicated after shock has been treated with appropriate vigour. In Case 1 there was much improvement after about six hours, but operation was unfortunately deferred until further deterioration had occurred. A stomach tube was then passed by the anaesthetist and guided by the surgeon into the afferent loop, which was emptied. A nasal tube was subsequently left in the afferent limb and an enterostomy was made in the efferent limb. An alternative would have been an entero-anastomosis between the two loops, a procedure still recommended as a routine prophylactic measure by Simon (1956). Although such a stoma must divert the alkaline pancreatic juice and bile to greater or less degree, he doubts on theoretical and practical grounds whether this predisposes to stomal ulceration. While this view may not be generally acceptable, routine nasal aspiration of the afferent loop after Polya gastrectomy can scarcely be criticized.

C. F. W. Illingworth (1957, personal communication) leaves a 7-mm. nasal tube in the afferent limb in two types of case: where the closure of the duodenal stump seems insecure and where there is reason to fear temporary obstruction at the anastomosis; for example, after a difficult gastrectomy for stomal ulcer. The wisdom of this practice is evident, but duodenal leakage by no means always follows a difficult closure, nor was afferent-loop distension in the two cases described associated with any technical doubts or difficulty. There is then a case for routine aspiration of the afferent loop until emptying is proved, although it may not prevent these complications absolutely. Wangensteen (1941) described a forked catheter, one limb of which was left in each limb of the anastomosis. He used it routinely and considered aspiration of the afferent loop the more important. The need for the surgeon to number afferent-loop distension among the early complications of Polya gastrectomy is indisputable. It may be necessary to reopen the abdomen urgently on slender evidence, but, once the decision is made, treatment is simple and success would seem almost certain.

Summary

Two fatal cases of acute distension of the afferent loop after Polya gastrectomy are reported.

The course in Case 1 suggests that severe shock can develop from the distension alone and shows that there may be no early physical signs whatsoever on examination of the abdomen.

The essential clinical feature in Case 2 was persistent abdominal distension in a patient who remained in good general condition until the onset, on the eighth post-operative day, of diffuse peritonitis from gangrene from the third part of the duodenum.

In both cases the absence is stressed of an evident mechanical factor to account for the distension: atony is suspected, and may have been due to an unusually extensive incidental division of vagal fibres.

Acute afferent-loop distension may be indistinguishable clinically from the other early abdominal complications of Polya gastrectomy. The treatment is rapid resuscitation, when necessary, and urgent surgical relief of the distension.

Acute afferent-loop distension is commonly suspected to be a cause of leakage from the duodenal stump, and the possibility of avoiding both these complications by routine post-operative aspiration of the afferent loop is discussed.

I thank Professor Milnes Walker and Mr. W. M. Capper for permission to report these cases.

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FAECAL OCCULT BLOOD TESTS WITHOUT DIETARY RESTRICTIONS

BY

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The most widely used tests for occult blood in faeces involve the use of benzidine. This substance is now difficult to obtain because its carcinogenic properties make its manufacture dangerous, and it seems likely that it will soon be completely unobtainable. It will therefore be necessary to use methods for detecting faecal occult blood which do not involve the use of benzidine. The orthotolidine method of Kohn and O'Kelly (1955) appears to be a suitable alternative, but when this method is used the patients must be put on a meat-free diet if false-positive results are to be avoided. This is not always convenient; special diets have to be ordered (and adhered to) and there is a delay of four days before the result is known. As Kohn and O'Kelly point out, it is quite easy to alter the sensitivity of the test, and we have tried to find a level of sensitivity such that negative results are obtained from patients who are on a normal diet and who are not bleeding into the gastro-intestinal tract.

Methods

The ages of the 49 hospital in-patients selected (27 males and 22 females) ranged from 16 to 85 years. They were on a normal hospital diet (excluding liver) and had no signs or symptoms of gastro-intestinal or other disease which might cause bleeding into the alimentary tract. Three specimens of faeces were collected from each patient, on consecutive days where possible. Each specimen was tested for occult blood by the test-tube method of Kohn and O'Kelly (1955), using five different levels of sensitivity.

Details of Method.—A piece of faeces about the size of a pea was mixed with 5 ml. of water, and the resulting suspension was boiled and cooled. A stock solution was prepared containing 4% orthotolidine "AnalaR" in absolute industrial alcohol. Five dilutions of this stock solution with 50% v/v acetic acid were made—namely, 33%, 20%, 10%, 5%, and 2%. These solutions were stored in the refrigerator and renewed monthly. Four drops of each dilution were treated with one drop of 20-volume hydrogen peroxide, and left to stand for one minute. If no blue or green colour developed, a drop of the faecal suspension was added.

The results were recorded thus :

Strongly positive (+++) Blue or green colour within 5 seconds
Positive (++) .. .. " " " " " 5–20 "
Weakly positive (+) .. " " " " " 20–60 "
Negative (−) .. .. No blue or green colour within 60 "

Fourteen patients who showed at least a weak positive with the 10% dilution in more than one specimen were investigated as follows: (1) The three specimens were retested; these results were in good agreement with the first results. (2) The patients' case histories were examined for any indication of possible bleeding into the alimentary tract. (3) In two cases the patient was put on a meat-free diet and further specimens were collected. In both cases positive results were obtained, using the 20% dilution of the stock orthotolidine solution.

On the basis of these investigations the two patients mentioned, and two others in whom gastro-intestinal bleeding seemed likely, were excluded from the series. The results obtained in the remaining 45 patients (135 specimens) are shown in Table I.

TABLE I.—*Results in* 135 *Specimens*

Reaction	Dilution of Stock Solution				
	33%	20%	10%	5%	2%
Negative ..	4 (3%)	36 (27%)	97 (72%)	122 (90%)	131 (96%)
Weakly positive	6 (4%)	30 (22%)	26 (19%)	7 (5%)	1 (1%)
Positive ..	84 (63%)	65 (48%)	11 (8%)	5 (4%)	2 (2%)
Strongly positive	41 (30%)	4 (3%)	1 (1%)	1 (1%)	1 (1%)

Sensitivity of Methods

Specimens of faeces were collected from a normal subject who was on a meat-free diet. These were diluted with water to give a semi-solid specimen. Out-of-date transfusion blood (haemoglobin 13.3 g./100 ml.) was added to the sample to give various concentrations (blood expressed in millilitres and faeces in grammes). These dilutions of blood in faeces were tested for occult blood by several methods. In each case two separate sets of dilutions of blood in faeces were prepared and two tests carried out on each dilution. The tests used were:

(1) The orthotolidine tube test of Kohn and O'Kelly (1955), using five different dilutions of the stock solution.

(2) The "occultest" and "hematest" tablet tests. The occultest tablets are intended for the detection of blood in urine, and the hematest tablets for the detection of blood in faeces. In both cases it was found that the result was easier to read, and that more consistent results were obtained, if the tablet was placed at the edge of the faecal smear instead of in the centre. The method used was as follows. A thin smear of faeces was made on one of the test papers and an occultest or hematest tablet was placed half on and half off the smear; two drops of water were placed on the tablet so that the water flowed off on to the paper. The results were recorded as follows, depending on the time of appearance of a blue colour on the paper:

Strongly positive (+++) .. Colour within 15 seconds
Positive (++) .. .. .. " " 15–60 "
Weakly positive (+) .. .. " " 60–120 "
Negative (−) .. .. .. No colour within 120 seconds

(3) Gregersen's slide test as described by Harrison (1957). "Benzidine for blood testing" supplied by British Drug Houses Ltd. was used. The results were recorded thus:

Positive (++) .. Colour developing within 30 seconds
Weakly positive (+) " " " 30–60 "
Negative (−) .. No colour developing within 60 seconds

The results obtained with these tests are shown in Table II.

TABLE II.—*Results with three Tests*

Dilution of Blood in Faeces 1 in:	Haemoglobin (mg./100 g. Faeces)	Orthotolidine Tube Test: Dilution of Stock Solution					Tablet Tests		Gregersen Slide Test
		33%	20%	10%	5%	2%	Occultest	Hematest	
5,000	3	−	−	−	−	−	−	−	−
2,500	5	+	−	−	−	−	−	−	−
1,000	13	+	−	−	−	−	−	−	−
500	27	++	+	−	−	−	−	−	−
250	53	++	+	−	−	−	−	−	+
100	130	+++	++	+	−	−	+	−	++
50	270	+++	+++	++	+	−	+	+	++
25	530	+++	+++	+++	++	+	++	+	++
10	1,300	+++	+++	+++	+++	++	++	++	++
5	2,700	+++	+++	+++	+++	+++	+++	+++	++

Discussion

In this series of tests a large number of positive results were obtained with the 33% and 20% dilutions of the stock orthotolidine solution. It is obvious that neither of these dilutions can be used to test specimens from patients on a normal diet. At the other end of the scale, four positive results were obtained even with the 2% dilution of the stock solution. These were from two patients, in neither of whom was there any evidence of gastro-intestinal bleeding; one was suffering from pneumonia, and the other had fractured her femur about two months previously.

These results suggested that a certain number of false-positive results must be expected in patients on a normal diet unless very insensitive tests are used. It should be pointed out, however, that the two patients who showed positive occult blood results when on a meat-free diet had no clinical evidence of bleeding. One was convalescing after the amputation of a leg, and the other was a diabetic with peripheral vascular disease. It is quite possible that some of the patients in this series did have gastro-intestinal bleeding, and the results given in Table I should be taken as showing the *maximum* number of false-positive results which may be expected with the different dilutions of the stock orthotolidine solution when specimens from patients on normal diets are tested. It would be more satisfactory to test specimens of faeces from healthy subjects, but this was found to be impracticable.

On the basis of these results, the 5% dilution of the stock orthotolidine solution was chosen for testing specimens from patients who are on a normal diet, provided foods containing particularly large amounts of blood—for example, liver—are excluded. This dilution was chosen as representing a reasonable compromise between a high incidence of false positives and a low sensitivity. With this dilution, a strongly positive result is highly significant, but false-positive or weakly positive results may occur in up to 10% of cases. The reduced sensitivity of this test when compared with the sensitivity of the test using a 33% dilution of the stock solution, as recommended by Kohn and O'Kelly (1955), is, of course, inevitable. In cases of doubt a meat-free diet should be instituted and the more sensitive test used.

The use of the 5% dilution of the stock solution gives a rather less sensitive test than the Gregersen slide test, which is also intended for use without dietary restrictions but which involves the use of benzidine. However, Thornton and Illingworth (1955) have noted the occurrence of positive reactions in the Gregersen slide test with specimens from normal subjects on unrestricted diets.

If it is desired to carry out tests for faecal occult blood in the wards, the tablet tests have the advantages of convenience and simplicity. One criticism of these tests is that false-positive results may occur because the faeces are not boiled to destroy enzymes. A series of tests carried out in this laboratory suggests that this source of error is not of very great importance. A comparison was made of the results obtained with the occultest tablets and those obtained with the benzidine method described by Harrison (1957). Out of the 15 specimens which gave a negative result with the benzidine test, four gave weakly positive results with the occultest tablets, while none gave positive or strongly positive reactions.

The hematest tablet sometimes turns pale blue when the water is placed on it, even when the test is negative. This

may cause confusion, particularly with inexperienced staff, so we prefer the occultest tablet test for ward use, in spite of its greater sensitivity, which will presumably produce a higher incidence of false-positive results. If this test is used on specimens from patients on a normal diet, weakly positive results are of doubtful significance, but positive results are probably significant, and strongly positive results are highly significant.

Summary

A modification of the orthotolidine test for faecal occult blood is described. It may be used when the patient is on a normal diet, provided foods containing particularly large amounts of blood—for example, liver—are excluded. The test is much less sensitive than the standard orthotolidine test. Strongly positive results are significant, but false-positive and weakly positive results may be expected in up to about 10% of cases.

The occultest tablet test is suggested as a suitable alternative, particularly for ward use.

My thanks are due to Dr. H. Loewenthal, senior pathologist, for his advice and encouragement; to the medical and nursing staff of the Enfield Hospital Group who assisted in the collection of the specimens; and to Messrs. Ames (London) Ltd. for the supply of hematest tablets.

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INDICATIONS FOR USE OF IPRONIAZID IN PSYCHIATRIC PRACTICE

BY

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Iproniazid ("marsilid"; 1-*iso*nicotinyl-2-*iso*propylhydrazine phosphate) is a derivative of isoniazid and was originally introduced because of its similar activity on tubercle bacilli. In the early clinical trials of iproniazid in pulmonary tuberculosis, using doses of 300 mg. daily, increased appetite associated with large gains in weight was noticed, accompanied in a proportion of patients by mood changes which sometimes developed into frank psychosis. These changes were reversible on stopping the drug (Kamman *et al.*, 1953; Crane, 1956).

The mechanism of this reaction is at present not fully understood, but it is thought to arise from the action of iproniazid as an inhibitor of monoamine oxidase. Iproniazid in animal experiments has been shown to produce an elevation of the 5-hydroxytryptamine (serotonin) level in the brain, and, if injected into rabbits over two to three days, to lead to a state of excitement.

These findings have aroused interest in the effect of iproniazid on depressive and allied affective states in man, and a number of papers have been published and a symposium was held in New York in November, 1957, on the use of iproniazid in psychiatric diseases. It seems to be generally agreed that iproniazid is of value in the treatment of depressive illness, but claims have been made that as many as 75% of patients do as well, if not better, with it than with electric convulsion therapy (Kline, 1957). Electric convulsion therapy is widely used in the treatment of depression at the present time, and such claims, if confirmed, would obviously have far-reaching effects. A pilot trial has therefore been undertaken in this department to determine its value in depressive and allied psychiatric disorders.

Method

So far 131 cases have been treated with iproniazid. They comprise 99 depressions, 24 anxiety states, 6 obsessional states, and 2 cases of anorexia nervosa. Cases were at first unselected, but as the indications for the use of iproniazid became known the tendency was to choose those most likely to be helped. Both in-patients and out-patients were treated, but the majority were out-patients, these being seen once a week for the first month and then at progressively longer intervals.

Each patient was started on 150 mg. (three tablets) daily, in three divided doses, but was warned to reduce the drug to 100 mg. daily if side-effects developed, and to stop altogether if these continued. This daily dosage was continued for four weeks, and then reduced by 50 mg. at intervals of a month, until either the patient was off the drug completely or symptoms of depression again began to be experienced. If this happened the daily dosage of iproniazid was increased by 50 mg. weekly until the patient was symptom-free, and maintained for a further month before again being reduced.

The results are shown in the Table.

Results of Treatment

Type of Patient	No.	Recovered	Improved	No Effect	Worse (Agitation and Tension Increased)
Depression with weight loss	67	15	22	21	9
" without weight loss	32	—	1	13	18
Anxiety state	24	—	—	—	24
Obsessional states	6	—	—	6	—
Anorexia nervosa	2	—	—	2	—

Discussion

Iproniazid was found to be of value in the treatment of certain patients showing symptoms of mild depression associated with loss in weight. There was a time-lag of between 7 and 10 days after starting the treatment before improvement was noticed, the patient then reporting that he had an increased appetite, a sense of "couldn't care less," and more energy. Some of these mild depressive illnesses had continued for several years, adversely affecting work capacity and family happiness. Amphetamine and its derivatives had had an immediate but short-lived uplifting effect. E.C.T. had caused temporary or partial improvement only. The natural course of the illness is to progress to full recovery, and this makes the interpretation of any treatment of depressive illness particularly difficult.

Many of the patients in this trial had been ill for over a year, and may therefore have been remitting naturally. None the less, iproniazid undoubtedly helped some to improve, and this was confirmed by the return of symptoms that sometimes occurred when the drug was reduced or stopped. The advantage of iproniazid over amphetamine or E.C.T. in this type of depression is that improvement appears to be maintained as long as the drug is given in adequate dosage. It thus seems possible that the course of some of these mild but obstinate depressive illnesses associated with loss of weight, which in these trials included both manic-depressive and involutional groups, may be shortened by treatment with iproniazid. Severe depressions, however, were not helped and depressive states associated with agitation were often made worse, and E.C.T. was usually

needed without delay. Two such patients, treated with iproniazid, had to be admitted to hospital hurriedly because of fear of suicide.

It is interesting to note that only one patient who complained of depression but had lost no weight was improved by iproniazid, and that a number of others stated that their symptoms were made worse. This is in contrast with the much better results in those who had lost weight. It was also noticed that E.C.T., either previous or subsequent to treatment with iproniazid, also tended to aggravate the symptoms of some of those patients who had lost no weight and were made worse by iproniazid. It is possible that an underlying chronic state of tension was present in many of these patients, and this may be why they felt worse with both treatments. Iproniazid certainly caused obvious anxiety states to flare up in a remarkable way after two or three days of treatment, and, in fact, a trial of 150 mg. of iproniazid daily for three days was often useful in differentiating between a tension state and a true depression; patients complained of intense anxiety, weakness, palpitations, and an increase in phobias, but if treatment was continued long enough a number did notice increasing appetite.

Obsessional states, like anxiety states, were not helped, and two cases of anorexia nervosa, given iproniazid to the limit of tolerance, failed to increase their weight and noticed no change in appetite on out-patient treatment.

Side-effects.—These depended largely upon the dosage, and occurred increasingly when 150 mg. or more of iproniazid a day was given. Constipation, impotence, decreased need of sleep, dryness of mouth, and blurring of vision were all reported. These are common symptoms in depression, but seemed to be caused by the drug, since they disappeared on stopping it; and they would sometimes be seen despite improvement in successful cases. Six patients had symptoms of postural hypotension, such as sudden dizziness and vertigo on standing, and two patients actually had attacks of fainting until they stopped the drug. Systolic blood pressure showed a drop of only 10–20 mm. from normal, but patients were free from side-effects at the time of measurement. An interesting side-effect was noticed in patients receiving modified insulin. Those who had previously had 20 or more units of soluble insulin without hypoglycaemic reactions began, two or three days after starting iproniazid, to become drowsy and difficult to arouse. One woman at first sight seemed to have lapsed into coma, but there was no sweating, and blood-sugar estimates were within normal limits.

Conclusion

Iproniazid is of value in the treatment of mild depression associated with loss of weight, and will often lead to a dramatic improvement in suitable cases. It is of no use in severe depression, and may be dangerous if given to agitated patients, for whom electric convulsion therapy is usually needed without delay. Indiscriminate use of iproniazid by practitioners is therefore to be avoided, but in carefully selected cases it is well worth a trial.

I thank Dr. William Sargant for his encouragement and advice, and Dr. Mary Briggs, of Roche Products, for a generous supply of marsilid.

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The St. Marylebone Operatic Society has presented £118 to the National Society for Cancer Relief as a result of two performances of *The Mikado* at the St. Pancras Town Hall last January. The Society will be presenting *The Gondoliers* in September and the proceeds will again be devoted to the National Society for Cancer Relief.

Medical Memorandum

Calcinosis Universalis

Atkinson and Parkes Weber (1938) divided cases of calcinosis into two main groups—one in which the deposits of calcareous material are confined to the skin and subjacent tissues, and which they termed "calcinosis circumscripta," and a second or universal type, "calcinosis universalis," in which the distribution is more widespread and the degree of severity of the lesions varies greatly. The skin, muscle, tendon fascia, and nerves may be involved. Although both forms are similar pathologically, they differ clinically in their prognosis. Death has occurred in the first variety, but it is in the second form that this outcome is the invariable rule, although many years may pass before the patient finally succumbs.

The first authentic case of calcinosis was reported by Teissier in 1876, but the condition was first reported by Holländer as occurring in 1654. In 1902 Hutchinson described the first case in the English literature. The rarity of the condition justifies the publication of the following case.

CASE REPORT

A married woman was first seen in July, 1943, at the age of 58. Apart from "rheumatism" at 18, she had never had a day's illness until 1937, when, in her 52nd year, she began to suffer from burning pain in the thumb and second finger of her right hand. The pain, which was constant, was aggravated by manual activity and radiated upwards on the volar aspect of the forearm towards the elbow. Within a matter of weeks all fingers of the right hand were affected, and corresponding symptoms had appeared on the left side, but the pain remained localized to the fingers. Walking was no longer a pleasure because of a feeling of heaviness in the feet, while even the slightest exertion caused fatigue. Some months later intense itching of the skin of the upper chest was noted, accompanied by a glossiness of the skin, which persisted after disappearance of the itch a few weeks later. During this period her nails had become brittle and the tips of her fingers bulbous.

Within five months of the onset of the first symptoms, hard white nodules had appeared deep in the pulp of the fingers. These nodules gradually worked towards the surface, causing intense pain due to a local inflammatory reaction. When the overlying skin broke down, the hard central core was discharged, with immediate relief of pain, after which healing took place uninterruptedly. About this time larger masses were seen to have formed over the left patella and right shin, and on the lateral aspects of both heels. While some of these accumulations continued to increase in size gradually, others remained unchanged for months. As these calcareous tumours increased in size and number there was a corresponding loss of weight and of physical vigour.

When first seen, she was a healthy-looking woman of 58, of average height and nutrition, in whom the skin of the face, arms, and legs showed a dark pigmentation. The finger-nails were short and brittle, and the terminal phalanges bulbous and somewhat truncated. Widely scattered in and under the skin of the hands, elbows, legs, and feet were

Calcium Excretion

	Total Calcium Intake	Urinary Output	Output in Faeces	Retained
First 3-day period	2·1 g.	199 mg.	1·2 g.	0·7 g.
Second ,, ,, ...	2·1 g.	107 mg.	1·18 g.	0·8 g.

many small hard nodules. No abnormality was noted in any other system.

On a diet with a controlled daily calcium intake of 752 mg. the calcium excretion by bowel and kidney was estimated over two three-day periods (see Table). During the first, 0.7 g. was retained, and during the second, 0.8 g. During this time the daily urinary excretion never exceeded 800 ml. Thus it may be that kidney inefficiency played a part in calcium retention, but further investigation had to be discontinued at this point as the patient developed pneumonia.

These studies were repeated and extended some months later by Professor L. S. P. Davidson, to whom my thanks are due for the following facts. The investigation was carried out under complete dietetic and laboratory control

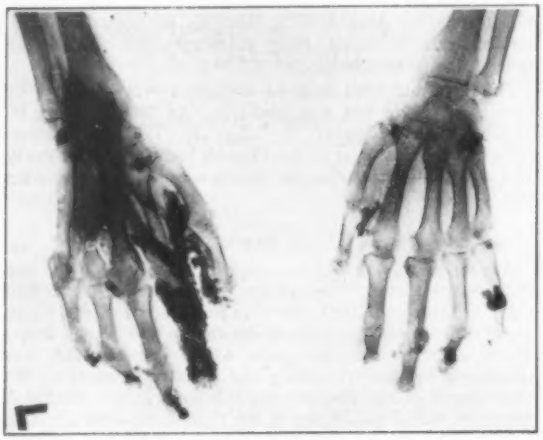

FIG. 1.—Radiograph showing disappearance of terminal phalanges and sclerosis of necks of second phalanges.

FIG. 2.—Radiograph taken in June, 1948.

over a 27-day period. Cortisone was given from the 12th to the 21st day—300 mg. on the first day, decreasing to 100 mg. on the third—but calcium excretion levels were recorded throughout the entire period, the patient having been kept on a constant daily calcium intake. The calcium content of the stool varied so much during the investigation that it is difficult to interpret the results, yet two points of possible significance did emerge: a slight increase in the output of urinary nitrogen and a slight increase in the output of urinary calcium were observed during and after cortisone administration.

It is probable that some of the calcium deposited was derived from the skeleton, since there was radiological evidence of absorption of the terminal phalanges of the fingers—a feature which has not been recorded previously—and some possibly resulted from retention due to kidney deficiency. In spite of this latter possibility there was no clinical or radiological evidence of obvious improvement following cortisone therapy in the doses used.

During the next few years, and in spite of orthodox methods of treatment, the deposition of calcium increased and the condition of the patient deteriorated. Surgical removal of the very painful deposits was the only means by which some degree of temporary relief from pain was obtained. On several occasions masses varying in size from a golf ball to a large turnip were removed from the margins of the anus and vulva, from the perineum, buttock, and sacrum. On one occasion a tumour mass consisting of an extensively infiltrated gluteus maximus weighing over 1½ lb. (680 g.) had to be literally chiselled off the sacrum.

The material removed at operation varied in consistency from a white chalky fluid to hard calcified masses of calcium phosphate and carbonate. The former predominated in the proportion usually found in bone.

Microscopically the swollen fibrous tissue fibres were outlined and rendered prominent by calcific granules, as were the elastic fibres also. The nerves were outlined by a fine granular deposit, but the blood vessels showed little involvement except at one point where a large vessel was surrounded by a chronic inflammatory cell reaction. In those areas in which foci were seen by the naked eye no cellular structure was noted.

FIG. 3.—Radiograph taken in January, 1951.

By 1952 the patient was bedridden, with loss of all voluntary movement in the joints of the hands, arms, feet, and legs. The subcutaneous tissue was minimal, and the skin was pigmented and tightly stretched over the bony prominences. *X*-ray films revealed widespread and diffuse deposits of calcium in the soft tissue over the nose, right chest, left hand and forearm, and, to a less degree, on the right, both hips and ischial tuberosities, and in the region of both knees, heels, and feet (Figs. 1–3). The terminal phalanges of the fingers (Fig. 1) disappeared and sclerosis of the necks of the second phalanges developed, rather suggestive of a beginning sequestration of the heads.

Serum investigations, carried out on several occasions, did not reveal any marked departure from the normal: blood urea, 20 mg./100 ml.; serum calcium, 11.7 mg./100 ml.; alkaline phosphatase, 5 units; acid phosphatase, 2 units; serum phosphorus and uric acid were normal.

The patient died of pneumonia in June, 1955, 17 years after the onset of calcinosis and 12 years after being seen for the first time. Permission for a post-mortem examination was not obtained.

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Reviews

CLOSED TREATMENT OF FRACTURES

The Closed Treatment of Common Fractures. By John Charnley, B.Sc., M.B., F.R.C.S. Second edition. (Pp. 260+xii; illustrated. 50s.) London and Edinburgh: E. and S. Livingstone Ltd. 1957.

The rare association of philosopher and craftsman is shown by the author in this edition, which is welcome, particularly as the substance of lectures given in Boston and some 60 illustrations are added and the chapter on the calliper is omitted. The additions are suitable, and the present volume provides not only well-tried principles but much matter for thought. Conservative treatment is the theme, and this is exemplified by the choice of groups of fractures which often are difficult to treat or leave the patient with disability. It is worthy of note that the motive for certain methods of treatment is usually based on the author's teaching that compression of cortical bone may be disastrous, whereas compression of cancellous tissue is desirable.

Most books on treatment of fractures are full of routine procedures, whereas Charnley succeeds in making the reader appreciate advantages of closed treatment and the place for open treatment and when this is indicated. Many examples are quoted of failure of open operative treatment, and it seems possible that some of these failures resulted from lack of professional skill or inopportune timing of the operation rather than from ignorance of principles. He records invaluable observations on the dangers of joint manipulation in children and on the prevention of joint stiffness in adults. Some may question the delay in starting finger movement or the time of commencing weight-bearing after some fractures around the femoral neck, but the greatest value of the book is that the reader can learn what he should think about when dealing with a fracture.

It would be of interest to many if the author had departed from assessing end-results by the speed of union, the absence of deformity, and the quantity of joint movement. These are less important to the patient than his working capacity, his ability to remain in his old job or a new one, and his place in the community. Further information would be welcome on the working capacity 20 years after a number of the ankle fractures quoted. The author is to be congratulated on providing what is wanted by many dealing with fractures.

ST. J. D. BUXTON.

PORTAL HYPERTENSION

A Contribution to the Study of Portal Hypertension. By Alan Henderson Hunt, M.A., D.M., M.Ch., F.R.C.S. (Pp. 230+xi; illustrated. 40s.) Edinburgh and London: E. and S. Livingstone Ltd. 1958.

This monograph is the prize-winning essay for the Jacksonian Prize of the Royal College of Surgeons for 1956, and is, as its title indicates, a contribution which is based on the experience of about 250 patients who had a disease of the liver or extrahepatic portal-vein obstruction. In conformity with the terms of the essay it is a record of the author's own work, and illustrative case records are placed in an appendix. Thus the reader will not find a review of the whole subject, and a number of methods of treatment being used to-day are barely mentioned, while some, such as arterialization of the portal vein, which the author has tried and given up, are described.

The writing is clear and concise and the results are candidly presented. These show the advantages of venous anastomoses as a means of preventing haemorrhage, and the significantly better results after portacaval as compared with spleno-renal anastomosis. The author's method of recording the rate of blood flow in the portal system by radioactive sodium is described, and the operative techniques which have been employed are given in separate appendices. No definite conclusions have been reached regarding the effective treatment of haemorrhage from oesophageal varices in those patients in whom a venous anastomosis is not possible.

This is a record which must be read by all who are interested in this subject. It is excellently produced, and the illustrations, particularly the radiographs, could not be better.

R. MILNES WALKER.

ANATOMY OF NERVES, BLOOD VESSELS, AND LYMPHATICS

Atlas of Systematic Human Anatomy. By Gerhard Wolf-Heidegger, M.D., Ph.D. Volume III: *Systema Nervorum—Vasa Sanguinea et Lymphacea.* Foreword by G. A. G. Mitchell, O.B.E., T.D., M.B., Ch.M., D.Sc. (Pp. 167; 172 plates, mostly in colour. 55s.) Edinburgh and London: E. and S. Livingstone. 1957.

This is the third volume of a great textbook of anatomy from the University of Basle, and it deals with the anatomy of the central and peripheral nervous systems, of the blood vessels, and of the lymphatics. A foreword by Professor Mitchell, of Manchester, introduces a work of consummate art.

The drawings of the brain are beyond compare, the finest which we have ever been privileged to study. They must have been made from superb dissections, but the artists who made them must be anatomists in the first rank, for they show in every line a thorough knowledge of detail which can only come from close study. Description is wisely excluded from the drawings themselves, but each is accompanied by a precise sketch to which is attached a full index of its detailed structure. The illustrations of the brain include every possible view and section, and many dissections of great beauty and originality. It is a pity that the few photomicrographs are quite inadequate and seem out of place in the company of these glorious drawings.

The illustrations of the peripheral nerves are equally good, and indeed these drawings in themselves form a fairly complete anatomical atlas. Many of the dissections are of great originality, and the superb draughtsmanship adds to the pleasure of their study. It is a wonderful atlas and of incomparable value to any anatomist. The authors would make it unique if they would add a short account of the anatomy of childhood, in many respects different from that of the adult. It is not generally realized, for example, that the peripheral nerves in a child are very nearly as large as those of an adult and quite out of proportion to the other structures. I have myself twice sutured in small children the deep branch of the ulnar nerve with complete functional recovery in twelve months. The nerves appeared enormous, and had of course a vitality far greater than in an adult. But this is only one small example of what is at present an uncharted field.

HENRY SOUTTAR.

BEJEL

Non-venereal Syphilis: A Sociological and Medical Study of Bejel. By Ellis Herndon Hudson, M.D., D.T.M.&H.(Lond.), F.A.C.P. (Pp. 204+viii; illustrated. 30s.) Edinburgh and London: E. and S. Livingstone Ltd. 1958.

This short book has been written with the object of arousing the interest of a wide range of workers, from syphilologists to lay workers and sociologists, into the "unitarian" theory of treponemal infections. In order to achieve this the author has adopted a simple style of writing which does not detract from the subject-matter of the book, which is largely based upon his experience of "bejel," a non-venereal syphilis endemic in certain areas of Iraq. Thus, he gives a full description of this disease and its relationship to "franji," the local Iraqi name for venereally acquired syphilis. Some 78 photographs of various lesions of bejel are included, which are most informative and instructive. In addition the author produces much evidence in favour of the theory that, although venereal syphilis, bejel, yaws, and pinta are different clinical conditions caused by *Treponema pallidum*, they should be regarded as one entity, and to these conditions he applies

the term "treponematosis." The different clinical manifestations of treponematosis are ascribed to the varying local climatic and serological conditions. The serology and pathology of bejel are briefly dealt with, and the book ends with a description of the treatment employed by the author in the pre-antibiotic era.

This is a readable and thought-provoking monograph which deserves the attention of all who are interested in treponemal diseases.

I. N. ORPWOOD PRICE.

SELECTIVE PULMONARY ANGIOGRAPHY

Selektive Lungenangiographie in der Präoperativen Diagnostik und in der Inneren Klinik. By Wilhelm Bolt, Werner Forssmann, and Hans Rink. Foreword by H. W. Knipping. (Pp. 199+xv; illustrated. DM. 54.) Stuttgart: Georg Thieme Verlag. 1957.

This monograph on selective pulmonary angiography, whereby the contrast medium is concentrated into the area to be studied, is written by three experts: Professor Wilhelm Bolt, of the University Clinic of Cologne; Professor Forssmann, a Nobel Prize winner who pioneered the subject of cardiac catheterization in 1929 by passing a cardiac catheter on himself and followed this up with a pulmonary angiogram; and Dr. Hans Rink, whose technical achievements in this field are singled out in a foreword by Professor Knipping.

The whole subject of the pulmonary circulation is, of course, of considerable interest both to physicians who are specially interested in diseases of the chest and to cardiologists. The anatomical and functional relationship of the heart and lungs, working as a single oxygenating unit, is well illustrated in this monograph.

The authors make a broad approach to the subject of the pulmonary circulation and respiratory function and emphasize their clinical importance. The technique of, indications for, and contraindications to this method of investigation by selective pulmonary angiography as a preoperative diagnostic measure and for post-operative study in various diseases of the lungs and in acquired and congenital heart disease are well presented. Tribute is paid to the early work of Brauer in relation to his studies of pulmonary function, and to Sauerbruch for his contributions to modern thoracic surgery. The book is, in fact, dedicated to these two. The pioneer work of people in other countries is, however, not forgotten, especially work in the field of applied physiology of respiration and the circulation by Barcroft, Henderson, van Slyke, and James Alexander Miller and his pupil Cournand. The authors emphasize that this method should be used only after a full clinical investigation of the particular case. Its value as an aid to diagnosis and in the study of the pulmonary vasculature in selected cases—for example, atelectasis, emphysema, new growths of the lung, and certain forms of pulmonary tuberculosis—in pre- and post-operative thoracic surgical studies, and in congenital and acquired heart disease, is well outlined and beautifully illustrated throughout.

The authors' analysis is based on a survey of selective pulmonary angiograms from some 2,000 cases. There is no doubt that this recent method of study, which the authors have compared and contrasted with the results of studies of pulmonary function, bronchograms, and thoracic surgical investigation, is extremely impressive. The exceptionally comprehensive bibliography to world literature enhances the value of this work, which is worthy of careful study by all interested in diseases of the heart and lungs.

PHILIP ELLMAN.

FUNGUS DISEASES

Clinical and Immunologic Aspects of Fungous Diseases. By J. Walter Wilson, M.D. (Pp. 280+xix. 51s.) Springfield, Illinois: Charles C. Thomas. Oxford: Blackwell Scientific Publications. 1957.

This work is a departure from the conventional form of textbook in which medical mycology and fungus diseases are considered together as an interrelated study. "Written for clinicians," the presentation is clinical rather than mycological, and emphasis is placed particularly on problems of the immunology of the diseases.

About one-third of the book is devoted to coccidioidomycosis, which, as the best-understood of the systemic mycoses, serves, on the basis of analogy, as a guide to the elucidation of problems of other systemic mycoses. Among such problems are the striking differences, both pathological and immunological, in the types of disease which result from primary cutaneous and from primary pulmonary infections, respectively, by the same species of fungus; the persistence and progress of certain chronic secondary cutaneous lesions, long after all the deeper foci of the disease have disappeared and the deep organs have developed an immunological resistance to reinfection; very high infection rates in the endemic areas of some diseases, with a contrasting low incidence of the progressive and grave forms of these diseases, and the relationship of this to race and sex; the very low infection rate, poor immunological response, and high mortality rate in another systemic disease.

In connexion with serological studies the "antibodies" which are involved in the specific complement-fixation reaction are not related to immunity, the immunological significance of serum precipitins and the specific cutaneous hypersensitivity is not clear, and it may be difficult or impossible to demonstrate protective antibodies in the serum of immunized animals.

The clinical pictures are clearly and attractively drawn, the discussions on immunological problems are well documented, and the solutions put forward by the author are plausible and provocative of further study.

J. T. DUNCAN.

OPHTHALMOSCOPY

Principles of Ophthalmoscopy. By John K. Erbaugh, M.D. (Pp. 69+x; illustrated. 42s.) Springfield, Illinois: Charles C. Thomas. Oxford: Blackwell Scientific Publications. 1958.

This small handbook is interesting, but inadequate as a guide to the art of ophthalmoscopy. According to the author "its four chapters are the four parts of the complete examination." The first contains a good description of the detection of opacities in the ocular media. The second describes the features of the normal and pathological optic disk without, however, mentioning such anomalies as the hypermetropic disk, opaque nerve fibres, persistent hyaloid remnants, or overgrowth of glial tissue. The remainder of the book is devoted entirely to the ophthalmoscopic appearance of the retinal vessels in health and disease, and to a discussion of the nature and origin of various retinopathies. The A/V ratio—that is, the proportionate calibre of the arterioles and veins—is calculated elaborately, whereas the measurement of the degree of swelling of the disk in papilloedema is dismissed as unnecessary for practical purposes. Most surprising is the omission of any description of common conditions such as detachment of the retina, posterior uveitis, retinal deposits, and intraocular foreign bodies, whose detection depends entirely on ophthalmoscopy. The colour of the diagrams is misleading, but there are a few good plates illustrating retinal conditions. There is no illustration of an ophthalmoscope, while the description of its construction and manipulation is relegated to an appendix. No mention has been made of indirect ophthalmoscopy—which is so valuable in high myopia and in cases of early opacity of the lens.

D. R. CAMPBELL.

The nineteenth edition of *Stedman's Medical Dictionary* has been revised by N. B. Taylor and A. E. Taylor. Although it appears only four years after the previous revision, several thousand new words and some new illustrations have been added. The names of pharmaceutical preparations now appear in English, to conform with the *B.P.* and *U.S.P.* The dictionary is obtainable in Great Britain from Baillière, Tindall and Cox, Ltd., London (1,656 pages; 88s.).

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SOCIAL PROBLEMS OF PREMATURITY

In 1956, 11,779 liveborn children died in England and Wales during the first month of life, and of these 6,934 (or 59%) weighed 5½ lb. (2.5 kg.) or less at birth.[1] These figures emphasize that a further substantial reduction in neonatal deaths largely depends on increasing the chances of survival for premature children and reducing the incidence of premature births.

In recent years the neonatal mortality of prematurely born children has shown little tendency to fall. In 1953 it was 155 per 1,000 and in 1956 it was 146, and the greater part of this small reduction may be explained by an increase in the proportion of very small babies cared for in hospital. For the years before 1953 there are no comparable national figures. A neonatal death rate of 204 per 1,000 prematurely born children was recorded in a national sample of all births notified in the first week of March, 1946,[2] but, since mortality among premature children is higher in the colder months,[3] this National Survey figure can hardly be compared with the annual averages given by the Ministry of Health in recent years. The incidence of premature births has also been remarkably stable. It was 7% in 1946 and has remained at this figure since then.

Both the incidence of prematurity and the deaths associated with it are closely related to social and economic conditions. In 1931 the Registrar-General commented on the high mortality from prematurity among the infants of unskilled manual workers (Class V) and suggested that this arose from factors which might be directly remediable, since many infants were prematurely born into homes lacking facilities for their careful nurture.[4] These social-class differences in deaths from prematurity have persisted and appear to be explained by an excess of premature births among the poor rather than by a high mortality among the premature babies reared in unfavourable home conditions. If the incidence of prematurity in all classes could be reduced to that in Class I, there would be a great saving of infant life.[5]

Unfortunately the many studies made in recent years to find out why the incidence of premature birth is high among the poor have yielded inconclusive results. Dietary deficiencies during pregnancy, unless severe, have little influence on the birth weight of the baby,[6] and there is no unambiguous evidence to link a high incidence of prematurity with either employment during pregnancy or poor standards of antenatal care.[7] An interesting paper by C. M. Drillien[8] suggests at first sight that the incidence of prematurity is related to the environment in which a woman is brought up rather than to her environment after marriage. In a group of Edinburgh mothers, premature delivery appeared to be associated with the social class of the mother's father rather than of her husband. For a number of reasons the interpretation of this finding is difficult. The Registrar-General's social classes, which were used in the study, were designed for mass statistics and are not entirely suitable for looking at the changing status or economic position of individuals[9]; and many marriages across social-class boundaries may well entail no substantial change in living standards. This social classification is based on the occupation of husband or father, which has to be given in some detail; yet a clear statement by a wife of a husband's present occupation is sometimes difficult to get, and it is much more difficult for her to give the exact nature of an occupation followed twenty to thirty years ago by her father. In this study a further complication was introduced by modifications in the social classification—for example, all fathers who were miners were allocated to social class IV, whereas husbands who were miners were put in social class III or IV according to skill. It may well be that the results obtained were implicit in the methods of social classification used. Perhaps the type of question asked in this study will be answered conclusively only when a large group of women has been studied from childhood to maturity.

If the home environment in childhood is indeed of importance in determining the incidence of prematurity, we should have seen a fall in its incidence in recent years, since many of the women bearing children to-day benefited in childhood from good nutrition during and after the war and from modern standards of health education. The lack of evidence of such a fall is puzzling. To investigate these problems further we need to develop a more sensitive index of social status for use in medical research.

[1] *Report of the Ministry of Health, Part II*, 1956, 137, H.M.S.O.
[2] *Maternity in Great Britain*, 1948, Oxford University Press.
[3] Acker, M. S., and Best, S. C., *Canad. J. publ. Hlth*, 1955, **46**, 175.
[4] *Registrar-General's Decennial Supplement for England and Wales 1931*, part IIa, 1938, 166, H.M.S.O.
[5] Douglas, J. W. B., *Population Studies*, 1951, 535.
[6] Thomson, A. M., *Brit. J. Nutr.*, 1951, **5**, 158.
[7] Martin, F. M., *Med. Offr*, 1954, **92**, 263.
[8] Drillien, C. M., *J. Obstet. Gynaec. Brit. Emp.*, 1957, **64**, 161.
[9] *Registrar-General's Classification of Occupation for England and Wales, 1950*, 1951, H.M.S.O.

MECHANISM OF LACTATION

A recent symposium[1] at the Royal Society has clearly shown that modern research on lactation falls naturally into two main divisions. Both take account of the external environment and its effects on lactation via the central nervous system. One line of approach follows the nervous factors through to the anterior pituitary gland, target glands, and mammary gland; this type of research is concerned with the secretion of milk. The other main line of attack leads from the nervous system to the posterior pituitary and mammary gland; the end result studied here is the ejection of milk. The prime importance of the anterior pituitary in milk secretion has been confirmed by the work of T. R. Bradley and A. T. Cowie[2]: rats were unable to obtain milk from the mother 16 hours after removal of her pituitary. Removal of the ovaries or adrenal glands did not have this profound effect, though these glands have a part in the mechanism of milk secretion. The mammary glands do not develop normally in the absence of the ovaries, nor in the hypophysectomized animal treated with oestrogens. Dora Jacobsohn[3] has found that, if hypophysectomized castrated rats are allowed a high-carbohydrate diet and treated with both oestrogens and insulin, mammary growth is restored nearly to normal. She suggests that insulin largely counteracts metabolic derangements produced by hypophysectomy, thus rendering the breast reactive to oestrogens. It is upon such a local reactivity, she believes, that the effect of pituitary prolactin is superimposed. W. R. Lyons,[4] working with rats deprived of pituitary, adrenals, and ovaries, has shown that adrenal corticoids are necessary at all phases of the mammary gland's function. His experiments indicate that prepubertal breast development requires oestrogens, adrenal corticoids, and growth hormone; the changes at and after puberty require progesterone and prolactin in addition. Moreover, it is suggested that oxytocin may cause the liberation of prolactin from the anterior pituitary.[5]

The idea that the hypothalamus mediates the effects of emotional disturbance on milk secretion in the human has received support recently from N. Ziviani.[6] He quotes the case of a newly married woman, under chronic emotional tension due to sexual maladjustment, who had persistent lactation which was unaffected by menstruation or pregnancy, but which was inhibited at the time of a severe emotional shock. However, animal studies indicate that lactation is relatively independent of hypothalamic control. Anterior pituitaries grafted to sites remote from the sella turcica in rats continue to secrete luteotrophin[5 6] (considered to be identical with prolactin), and Dr. Benson and his colleagues[1] find that lactation is maintained, albeit at a reduced level, by such grafts; milk secretion falls when the graft is removed. Section of the pituitary stalk, while it may alter the composition of the milk, does not prevent secretion of it,[7 8] whereas this procedure abolishes other gonadotrophic functions,[9] as does transplantation of the anterior pituitary to distant sites.[10]

The early hypothesis that release of milk from the mammary secretory alveoli is due to a neuro-humoral reflex has been confirmed by recent research, and the components of the reflex established. It has long been known that suckling creates a sensory discharge from the highly innervated nipple. That this discharge reaches the innervation of the posterior pituitary, causing release of oxytocic hormone, is indicated by the fact that electrical stimulation of the supraopticohypophysial tract in lactating rabbits produces ejection of milk comparable to that produced by administering oxytocin.[11] The final component of the milk-ejection reflex became clear on the discovery of a myoepithelial investment of the mammary alveoli[12] which contracts under the influence of oxytocin, forcing milk into the ducts.[13]

Therapeutic application of these researches has been disappointing, though more research along these lines should eventually help the physician to control lactational disorders. Prolactin itself has given no useful results in the treatment of human hypogalactia.[14] Thyroxin[14] and iodoprotein[15] have been found to give some benefit in the prolongation of lactation, but not during the first fifteen days. Oestrogens, natural and synthetic, are sometimes useful in promoting pre-lactational breast development, and also for preventing or terminating milk secretion in parturient women[16]; this action is intensified by the simultaneous administration of progesterone.[17] More useful results have been obtained in stimulating milk ejection in women. The recognition that higher cerebral processes may inhibit the release of milk has been put to good use by M. Newton and N. R. Newton.[18]

[1] Discussion on the Physiology and Biochemistry of Lactation held by the Royal Society at Burlington House on March 13, 1958.
[2] Bradley, T. R., and Cowie, A. T., *J. Endocr.*, 1956, **14**, 8.
[3] Benson, G. K., and Folley, S. J., *Nature (Lond.)*, 1956, **177**, 700.
[4] Ziviani, N., *Arch. bras. Endocr.*, 1955, **5**, 121.
[5] Everett, J. W., *Endocrinology*, 1956, **58**, 786.
[6] Muhlbock, O., and Boot, L. M., *Ann. Endocr. (Paris)*, 1956, **17**, 338.
[7] Jacobsohn, D., *Acta physiol. scand.*, 1949, **19**, 10.
[8] Donovan, B. T., and van der Werff ten Bosch, J. J., *J. Physiol. (Lond.)*, 1957, **137**, 410.
[9] —— and Harris, G. W., ibid., 1956, **131**, 102.
[10] Harris, G. W., *Neural Control of the Pituitary Gland*, 1955, London.
[11] Cross, B. A., and Harris, G. W., *J. Endocr.*, 1952, **8**, 148.
[12] Richardson, J. C., *Proc. roy. Soc. B.*, 1949, **136**, 30.
[13] Linzell, J. L., *J. Physiol. (Lond.)*, 1955, **130**, 257.
[14] Robinson, M., *Brit. med. Bull.*, 1947, **5**, 164.
[15] Giraud, P., and Coignet, J., *Rev. Path. comp.*, 1953, **53**, 1441.
[16] Barnes, J., *Brit. med. Bull.*, 1947, **5**, 167.
[17] Romani, J. D., and Recht, P., *Ann. Endocr. (Paris)*, 1948, **9**, 247.
[18] Newton, N. R., and Newton, M., *Pediatrics*, 1950, **5**, 869.
[19] Haeger, K., and Jacobsohn, D., *Acta physiol. scand.*, 1953, **30**, suppl. 111, 152.

who have shown how important are tactile, auditory, and visual conditioning in the initiation of the milk ejection reflex. These workers have drawn attention to the importance of a tranquil mind and co-operative attitude in lactating women. K. Haeger and D. Jacobsohn[19] investigated a group of women with milk-engorged breasts who were unable to feed their babies. They found that injection of 2 i.u. of oxytocin four to five days after parturition produced striking increases in milk yields in nearly the whole of the group. Further, most of the responding women continued to secrete and eject milk without further injections of oxytocin. It appears that this treatment may be highly successful when failure of milk ejection is due to the patient's anxiety about her capacity to feed her baby at the breast.

A GREAT P.R.C.S.

Lord Webb-Johnson, who died last week at the age of 77, will for generations to come be looked upon as the greatest administrator the Royal College of Surgeons of England has ever had. Long before his memorable presidency of the College he had made his mark both as a general surgeon of considerable skill and also as Dean of the Medical School of the Middlesex Hospital. It was largely through his unsparing efforts that the Middlesex was rebuilt, and it must have been for him a moment of intense satisfaction when that great institution was opened in June, 1935, by the Duke of York. Lord Webb-Johnson was never content to leave things to others, and no detail was too small or too insignificant for his notice. As Sir Gordon Gordon-Taylor points out in our obituary columns this week, he acquired a considerable knowledge of architecture and the practical problems of building, knowledge which stood him in good stead when the destruction of part of the College of Surgeons during the war necessitated plans for reconstruction. The Royal College of Surgeons of England to-day is indeed a monument to the man who for eight arduous and harassing years as President carried out his determination to make the College one of the world's greatest educational centres for surgery. Departments were established and professorial chairs were endowed for anatomy and pathology ; a research department in ophthalmology was instituted ; teaching for the primary fellowship was begun in the college laboratories ; faculties in dental surgery and in anaesthesia were set up ; and the College began publishing its own *Annals*.

This would have been enough to tax the energies of any one man, but Lord Webb-Johnson saw to it that the College was also a congenial social centre where medical men and their societies could meet and dine together in the magnificent new hall. The College gave him a great opportunity in which to give expression to the many sides of his richly varied character, and the south side of Lincoln's Inn Fields to-day bears out the truth of Emerson's saying that an institution is the lengthened shadow of one man.

CASUALTY CLEARING

As a result of the Lewisham train accident at 6.17 p.m. last December 4, 88 people died and over 100 more were seriously injured. It occurred after dark in dense fog and freezing cold, so it is not surprising that communications broke down. A report on it was issued last week by the senior administrative medical officer of the South-east Metropolitan Regional Hospital Board, together with replies from ambulance, police, and other staffs to questions on how the arrangements fared. "There was general agreement," says the report, "that hospitals concerned in the Lewisham disaster were at a serious disadvantage because of the absence of early information that the accident had occurred as well as any reliable estimation of the extent of it." A shortage of stretchers early on impeded the transport of casualties. The telephone lines, blocked by inquiries from anxious relatives, failed to provide adequate means of communication among the various hospitals and individuals dealing with the injured. The labelling of casualties was criticized, and so were the drugs and dressings that were available. Finally, overall control was not clearly established at first, owing to the appalling weather conditions and breakdown of communications.

It may well be thought almost impossible that the treatment of such a serious disaster at night and in fog could proceed without a hitch, and a tribute is due to all who did their best to help that conditions were not more chaotic. In a crisis of this kind avoidable mistakes such as leaving the dead on stretchers could add up to serious impediments. Some relatively small changes in the standard arrangements, it seems, would help to prevent trouble in future. More stretchers, for instance, might be readily available and more but less elaborate drugs and dressings. The mobile medical teams "were unanimous that all that was needed was supplies of morphine and simple shell dressings," while the suggestion was made too that the morphine should be available in "tubonic" form, since difficulty was experienced in administering it with the syringes and in the form provided. To aid telephonic communication it might prove helpful for hospitals to have lines not listed in the directory but known to the medical and public services.

In response to a circular from the Ministry of Health in 1954[1] all hospitals made or revised plans for dealing with major accidents, but it is a common experience for plans which look perfect on paper to go awry in practice. At Lewisham an emergency plan not only existed

[1] H.M. (54) 51.
[2] *Brit. med. J. Supplement*, 1958, **1**, 171.
[3] *Brit. med. J.*, 1955, **2**, 1144.
[4] Ibid., 1955, **2**, 1562.

but had been overhauled only a month before the accident. A combination of fog, darkness, freezing cold, telephone breakdown, and a large casualty list is enough to upset any plan which can be made with the resources at present available for treating accidents. Whether these are sufficient has been raised from time to time. The Council of the B.M.A. has recently expressed the opinion that "in recent major accidents the arrangements for treating casualties have been satisfactory."[2] W. N. Leak[3] has claimed that general practitioners are allotted too small a part in these schemes, though they are often the first on the scene, especially in rural areas. And W. Gissane[4] has rightly argued from a unique experience at Birmingham that "the problem for solution is not represented by occasional disasters," for "each year, for the last 20 years, over 1¼ million injured have attended hospitals, and 10,000 have died in hospitals as the result of their injuries." Recent consultation between the B.M.A. and the Ministry of Health has shown that both the Ministry and hospitals throughout the country are alert to their responsibilities. But, as finance allows, should not more provision be made for treating the million or more people who receive hospital treatment for accidental injuries every year?

FIRST NEW HOSPITAL

The opening last week of the New Victoria Hospital at New Malden, Surrey, is a fine testimony to the spirit of Dr. F. B. Lake and his colleagues there. It is the first voluntary hospital to be established since the N.H.S. Act came into existence, and indeed the first new hospital of any kind to be opened in Britain since the war. The vision and enthusiasm which made this possible would have been admirable enough in earlier times; they seem the more so since bureaucracy began spinning a web round the medical profession. As reported last week,[1] a large private house was bought for £10,000 and converted to a fully equipped general hospital with 22 beds for £14,000. Future finance is to come from subscriptions by local members of the public, who have already shown their desire to have a hospital of this kind by subscribing handsomely to its creation. No charges are to be made to patients except for two or three beds in single rooms, for which a charge may be made to private patients. The local general practitioners will admit their patients and attend to them in the hospital, and a full consultant staff is available.

The old Victoria Hospital near by at Kingston-upon-Thames was, like the new, a general-practitioner hospital. As such, it was swept away in 1951 by the Minister of Health (Mr. H. Marquand) on the advice of the Ministry and the regional hospital board to make way for a gynaecological unit. The need for such a unit was undoubted; its advocates said it was urgent; but the need for a general-practitioner hospital was equally so, though it may have been impossible to state it in terms that seemed convincing to the planning authority. What gave a special importance to the action of the Kingston and Malden general practitioners was "their concern with the place of the general practitioner in the hospital life of this country,"[2] thus voicing what has been the consistent policy of the B.M.A. for many years. Many would agree with Dr. Lake,[3] who seven years ago wrote: "As larger hospitals become governed by remote control the smaller ones seem destined to cease to exist, and, since they are the only places where the two great divisions of medicine—hospital and general practice—meet and truly collaborate, this would seem to be a most retrograde step." Any measure to reverse this unhealthy trend is welcome, and the new hospital is a brave attempt to do so.

FOOD HYGIENE

In the recent correspondence on "Dirty Habits" in this *Journal* one writer complained of the foul smell which penetrated from the toilets of a café into the dining-room.[4] M. R. Candy[5] quite rightly pointed out that this was a contravention of the Food Hygiene Regulations, 1955, and that there might be a noticeable improvement in hygienic standards if members of the public would tell their medical officer of health whenever they see the regulations being flouted. Some who have strong views on this subject may feel that if they took this advice they would never be off the telephone to the town hall. But the regulations are gradually helping local authorities to improve matters and the fastidious customer to enjoy his food with a freer mind. By and large they give local authorities the power to see that caterers provide the premises and equipment needed for the hygienic preparation, storage, and serving of food, laying down that "no food business shall be carried on in any unsanitary premises." Any equipment which comes into contact with food must be capable of being cleaned and kept clean. The staff in premises where food is handled must "take all such steps as may be reasonably necessary to protect the food from risk of contamination," keep their persons and clothes clean, keep any cut or abrasion covered with a suitable waterproof dressing, refrain from spitting, refrain from smoking while they are in any room where there is uncovered food, and not wrap food, except uncooked vegetables, in newspaper.

Any food-handler who becomes aware that he is suffering from typhoid, paratyphoid, or any other salmonella infection, or dysentery, or any staphylococcal infection likely to cause food-poisoning, must forthwith notify the owner of the premises where he is employed, who in his turn must notify the medical officer of health. Sanitary conveniences in food premises must be kept clean and in efficient order, and must be so placed that no offensive odours therefrom can penetrate into any food room; and near every sanitary convenience provided for the staff there must be a clearly legible notice requesting users to wash their hands after using the convenience. All food premises, which must be kept

[1] *Brit. med. J. Supplement*, 1958, **1**, 290.
[2] *Brit. med. J.*, 1951, **2**, 784.
[3] Ibid., 1951, **2**, 794.
[4] Bell, J. K. S., *Brit. med. J.*, 1958, **1**, 1120.
[5] Candy, M. R., ibid., 1958, **1**, 1303.
[6] Burton, J., ibid., 1958, **1**, 1178.

clean and in good repair, should have a satisfactory water supply, and there must be wash-hand basins for the staff, with a supply of hot water, soap, and clean towels.

The regulations have now been in force for two years or so, and, though counter-hands can still sometimes be seen wiping their noses with their fingers before buttering a piece of toast or dabbing a plate with a cloth removed from beneath a sweating arm, the elementary facts about food hygiene are beginning to be more widely known. It is to be hoped that the "substantial efforts in publicity" described by Dr. John Burton[6] will eventually be followed by a substantial decline in food poisoning.

TREATMENT OF HOMOSEXUALITY

Of the tangled problems to which male homosexuality gives rise, one of the most direct interest to doctors is the medical treatment of it. The position is hard to assess for several reasons. Homosexuals differ greatly among themselves, particularly in the degree of bisexuality, and spontaneous changes along the Kinsey scale in the direction of greater homosexuality or greater heterosexuality are common. Moreover, many writers on treatment omit to describe in precise terms the psychosexual status before and after therapy, and use only vague ratings of improvement.

Changes resulting from treatment need to be considered under three headings: (1) direction and intensity of subjective sexual experience (impulses, fantasies, and dreams); (2) direction and frequency of objective sexual behaviour, and discretion with which it is practised; and (3) general well-being and adjustment. It is possible for changes to occur in any of these categories independently of the others, and even for improvement in one to be associated with worsening in another. Most reported series of treated homosexuals are small, sometimes (especially in the analytical literature) amounting to a single case only. Claims for successful treatment by leptazol[7] and testosterone[8] have not been substantiated, and the only chemical substances that may be beneficial are oestrogens—for the suppression of libido in selected cases. The main emphasis in treatment is on psychotherapy and social work. A. Ellis[9] found that 18 of 28 males treated psychotherapeutically were "distinctly" or "considerably" improved in terms of heterosexual adjustment. C. Allen[10] reported that of 16 cases treated privately 10 were cures, 4 social cures, and 2 failures. He found, however, that treatment was unlikely to succeed except when homosexuality was associated with shyness in the presence of women or with neurosis. These are important reservations, since many completely homosexual men have neither of these attributes. D. Curran and D. Parr[11] found no significant difference in the outcome of 25 private cases given psychotherapy and 25 not so treated. Isolated cases of change from complete homosexuality to complete heterosexuality by psycho-analysis have been reported, as by J. S. Poe,[12] but Anna Freud,[13] in reviewing the analytical literature, found that therapeutic pessimism prevailed. Among criminal homosexuals, the discouraging figures from the Cambridge survey[14] are to some extent counterbalanced by the results reported by workers of the Institute for the Scientific Treatment of Delinquency in probation cases.[15] In his interesting paper at p. 1323 of the *Journal* of this week Dr. J. A. Hadfield takes as his criteria of cure the loss of all homosexual desires and the establishment of normal heterosexual interests, and reports cure of eight patients, of whom at least three had no heterosexual interests before treatment. Dr. Hadfield does not use the Kinsey scale. Readers without analytical training are inevitably at a disadvantage in evaluating the early memories—for example, of difficult passage through the birth canal—which were elicited in the analysis of these patients. The paper by Drs. R. E. Hemphill, A. Leitch, and J. R. Stuart, of Bristol, on page 1317 briefly discusses treatment, but is of much general interest because it uses objective data and rates cases on the Kinsey scale, so facilitating comparison with other descriptive series such as those of R. Liddicoat[16] and Parr.[17] Since the Bristol series is composed of long-stay prisoners, there is a high proportion of offenders against boys. The number active both with adults and boys is surprisingly high, in contrast to the figures of Curran and Parr[11] and F. H. Taylor,[18] but the authors do not record how many were pre-pubertal boys. Eleven of the men studied by Hemphill and his colleagues had had medical treatment, and all reported some relief, though none experienced any change of sexual orientation.

The quotation from the Wolfenden Report with which Dr. Hadfield opens his paper is followed in the Report by a much more encouraging survey of other possible benefits of treatment. This is in line with the opinion of most practising psychiatrists that, though no cure can be offered to complete homosexuals rating Kinsey 6, it is sometimes possible to help bisexual young men gain a more heterosexual outlook. Relief can also be given to some of those homosexuals who are burdened by guilt, neurotic difficulties, or intolerable libidinous tension, and to those who genuinely seek help in restraining overt behaviour likely to involve them in trouble with the law. Future research may clarify these and other indications for medical intervention, but at present the prognosis varies much in different cases.

SPONTANEOUS PNEUMOTHORAX

The real incidence of spontaneous pneumothorax has always been difficult to assess, but N. Wynn Williams[1] has attempted to give a fair answer by analysing all the cases in the Bedford area in the last 10 years. The medical services for a population of 150,000 are centred on Bedford, and in this population 74 cases of spontaneous pneumothorax occurred in 70 patients—an

[7] Olvensky, J., *J. nerv. ment. Dis.*, 1940, **92**, 65.
[8] Myerson, A., *Arch. Neurol. Psychiat. (Chicago)*, 1946, **55**, 291.
[9] Ellis, A., *J. cons. Psychol.*, 1956, **20**, 191.
[10] Allen, C., *Med. Press*, 1956, **235**, 441.
[11] Curran, D., and Parr, D., *Brit. med. J.*, 1957, **1**, 797.
[12] Poe, J. S., *Psychoanal. Rev.*, 1952, **29**, 23.
[13] Freud, A., *Psychoanal. Quart.*, 1951, **20**, 337.
[14] Radzinowicz, L., *Sexual Offences*, 1957, London.
[15] Glover, E., *The Problem of Homosexuality*, 1957.
[16] Liddicoat, R., *Brit. med. J.*, 1957, **2**, 1110.
[17] Parr, D., *Proc. roy. Soc. Med.*, 1957, **50**, 651.
[18] Taylor, F. H., *Brit. med. J.*, 1947, **2**, 525.

average of 5 per 100,000 per annum. Put another way, at this rate approximately 2,500 cases will occur per annum in Great Britain, or the general practitioner with an average list would expect to see one case in 10 years.

The signs and symptoms of the acute attack are well known, but it is worth bearing in mind that 30% have an insidious onset. Most authors have reported a preponderance of males, and the Bedford figures confirm this, the proportion being five to one. But, whereas earlier figures showed that nearly all the patients were under 40, Wynn Williams found over 40% of his patients were over 40. The reason for this was a high incidence of associated chronic pulmonary disease—mainly bronchitis, emphysema, or bronchiectasis, with or without asthma. These patients tolerate badly the increased strain on their already impaired respiration: the 3 deaths in the Bedford series were in this group, as were the 4 deaths out of 61 cases reported by J. S. Crowther.[2] Spontaneous pneumothorax may also occur in association with acute lung infections, especially staphylococcal in children. The relationship of spontaneous pneumothorax with tuberculosis has been much debated. Though for many years it was considered the major cause, the publication of H. Kjaergaard's[3] report in 1932 changed this view. But H. P. Lambert's[4] more recent appraisal two years ago has shown that the relationship is still important. The pneumothorax may be associated with healed lesions, with active lesions, or may precede a radiologically visible tuberculous lesion by a few years.[5] Tuberculosis, being now in decline, will become a less important cause of spontaneous pneumothorax, but the proportion of cases it causes in men over 40 may rise because of the changing age and sex incidence of the disease.

While the aetiological factors and mode of development, well summarized by Brock[6] in 1948, are widely accepted, opinions about treatment have differed. On the whole, treatment has become more active as the thorax is entered with increasing boldness. As a general rule, rest in bed for a week or two is all that is required for a first attack without obvious associated disease. If after two weeks a radiograph shows no sign of re-expansion, then active treatment is justified in all but the mild cases. Active treatment should also be given for recurrences, whether on the same or opposite sides, and for first attacks when there is associated non-tuberculous disease, especially if the patient is over 40 years of age, because of the higher mortality in such cases. After any necessary emergency treatment, an intercostal catheter should be inserted and a suitable sclerosing agent such as iodized talc, silver nitrate, or kaolin introduced. Ideally this is best done with a thoracoscopy cannula, since the surface of the lung can be uniformly sprayed and prior inspection may show the presence of a large bulla, which may be better dealt with by excision at a subsequent thoracotomy. Suction, with careful management of the tube,[2] will quicken the rate of pleural adhesion.[7] Haemopneumothorax occurs in 5–10% of cases and must be regarded as an emergency. Unless bleeding ceases and complete aspiration of blood and re-expansion of the lung are accomplished within a day or two by simple measures, then thoracotomy must be done. The bleeding-point is seldom found, but complete evacuation of blood and rapid re-expansion of the lung will encourage pleural adhesion and usually control the bleeding. Pulmonary function is thus preserved and a future decortication avoided. The excision of large bullae, especially if compression of sound lung tissue is occurring, now has much support both as a curative and a prophylactic measure: even small blebs and bullous areas have been excised. Whatever the method of active treatment, it has one advantage over simple bed rest which may appeal to the patient—he can usually return to work much sooner.

[1] Wynn Williams, N., *Thorax*, 1957, **12**, 253.
[2] Crowther, J. S., *Tubercle (Lond.)*, 1955, **36**, 265.
[3] Kjaergaard, H., *Acta med. scand.*, 1932, Suppl. 43.
[4] Lambert, H. P., *Tubercle (Lond.)*, 1956, **37**, 207.
[5] Melrose, A. G., *Glasg. med. J.*, 1950, **31**, 263.
[6] Brock, R., *Thorax*, 1948, **3**, 88.
[7] Maxwell, J., ibid., 1954, **9**, 10.

M.O.H.s' CLAIM REFUSED

It was announced on June 3 that the Industrial Court had refused to establish the claim of the Staff Side of Whitley Committee C for a 5% increase in the salaries of medical officers in the public health service. This decision, particularly disheartening to our public health colleagues, will disturb the whole profession. The claim was based on the rise in the cost of living and the general movement in salaries since public health salaries were last readjusted on April 1, 1956. The court adjudicated against it because "the claimants must be considered as being members of the local authority hierarchy." A separate claim was being considered for other "designated" officers of local authorities—accountants, treasurers, engineers, and so on—and, in the opinion of the court, "it would not be appropriate for the salaries position of public health medical officers to be dealt with piecemeal and in isolation while that general claim is outstanding." Giving evidence last month for the Association of County Medical Officers of Health to the Royal Commission on Doctors' and Dentists' Remuneration, Dr. A. Elliott[1] is reported to have said that until the first award of the Industrial Court doctors in the local government service were dealt with as doctors. He added: "The figures had no regard to what was paid elsewhere in local government." Others giving evidence for the Society of Medical Officers of Health made similar points, Dr. H. D. Chalke saying, "Our basis is that we are first and foremost doctors, and our relationship should be with other doctors." Both the Management Side and the Industrial Court take the opposite view, and there seems to be no possibility of compromise. There is thus now all the greater need for a general review of the salary structure in the public health service. The only crumb of comfort, if it is comfort, that the Industrial Court can offer is to say that its award "is without prejudice to any claim for alteration of the salary structure or otherwise which public health medical officers may decide to put forward when the outstanding claim for designated and other officers has been settled."

[1] *Brit. med. J. Supplement*, May 31, p. 285.
[2] Ibid., May 31, p. 284.

WEIGHTS OF NEWBORN INFANTS

SEVENTEENTH AND EIGHTEENTH CENTURIES COMPARED WITH THE MID-TWENTIETH CENTURY

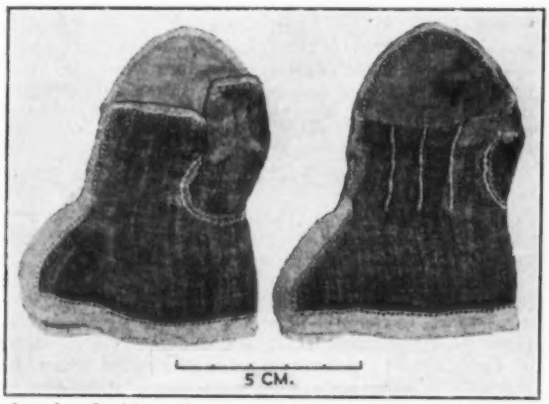
BY

PETER E. SYLVESTER, M.R.C.S., L.R.C.P., D.C.H.

From the Child Study Centre, Institute of Child Health, University of London

Clothes, suits of armour, doorways, and sometimes furniture seen in museums and ancestral homes often give the impression, perhaps incorrectly, that our ancestors were smaller than ourselves. While working on a longitudinal growth study at the Child Study Centre an opportunity presented itself to put this intriguing impression to the test, at least so far as newborn infants were concerned.

It was conceived that if a number of suitable infants' period garments could be found and measured then it might be possible to ascertain the size of the wearers



A pair of eighteenth-century muslin christening mitts. The fingers were exposed beyond the palm but covered at the back by a flap. (Victoria and Albert Museum. Crown Copyright.)

from statistics of modern infants. At the same time if it were possible to know the age of the wearers then an even more accurate and interesting comparison could be made. During a search amongst various items of infants' clothing, which included bonnets, vests, bootees, robes, and gloves, a number of christening mitts (see Fig.) were discovered. These offered the best medium for study because it was possible to date their origin—the seventeenth and eighteenth centuries—and to assess the ages of the wearers reasonably accurately from church registers of the period. The mitts had the advantage of being made of inelastic unshrinkable materials such as linen or fine muslin, which had resisted the passage of time very well.

This paper describes briefly what measurements were needed and how they were used, and raises some points for discussion before drawing conclusions.

Experiment

Eight pairs of seventeenth-century and 16 pairs of eighteenth-century mitts were measured on a flat rigid surface across the knuckle. Twice this dimension was taken as the circumference.

Most baptisms 200–300 years ago took place within the first month of life. It was possible to narrow this margin to the fifteenth day (mean 15.3 days), the median of a random sample of baptisms obtained from the eighteenth-century parish registers of St. James in Clerkenwell* and La Patente in Spitalfields.†

The size of infants who would fit mitts of known knuckle circumference was determined by first measuring, with a cotton thread and mark, the knuckle girth of 74 newborn infants in the lying-in wards of the West Middlesex Hospital and the Chiswick Maternity Hospital. This girth was correlated with the weight at the time of measurement. Regression equations were used from these data to estimate the weights of the wearers of the mitts.

So that the final comparison could be made, it was necessary to know the weights of present-day infants on the fifteenth day of life. Information from 95 infants at the Child Study Centre made this possible. Their birth weights were correlated with their weights at 4 weeks—an age at which routine measurements were made at the centre. A relationship being assured, a graph was composed in which the mean weights at birth and at 4 weeks were plotted against the age in days. The mean weight for the sample on the fifteenth day was taken at the point where a line joining the two weights intersected that day.

(*a*) Mean circumference of christening mitts=9.2 cm. (range, 7.6 to 10.6 cm.).

(*b*) Mean hand circumference of 74 newborn infants=8.5 cm. (range, 5.8 to 9.6 cm.).

The circumference was correlated with the weights, r=0.79 (significant beyond the 0.001 level).

(*c*) Mean of the estimated weights of infants which would fit the mitts=8 lb. 1 oz. (3.657 kg.) (standard deviation, 1 lb. 5 oz. (0.595 kg.); range, 5 lb. 5 oz. (2.401 kg.) to 10 lb. 7 oz. (4.729 kg.)).

(*d*) Mean birth weight of 95 children=7 lb. 6 oz. (3.340 kg.) (standard deviation, 1 lb. 3 oz. (0.539 kg.)).

Mean weight of same children at 4 weeks=8 lb. 10 oz. (3.921 kg.) (standard deviation, 1 lb. 4 oz. (0.576 kg.)).

The weight at birth was correlated with that at 4 weeks, r=0.85 (significant beyond the 0.001 level).

Mean weight at 15 days deduced from a graph=8 lb. 1 oz. (3.657 kg.) (weights to the nearest ounce).

Result.—The estimated mean weight of 24 mitt-wearers on the fifteenth day of life was equal to the mean weight of 95 newborn infants at the same age—namely, 8 lb. 1 oz. (3.657 kg.).

Discussion

Two weaknesses in this study will arise in the mind of the reader. The first one concerns the snugness of fit of the mitts. There were no means of securing the mitts by buttons or tapes, and it was assumed that if they were to be worn safely then they must fit snugly. However, it is possible that an infant, irrespective of snugness of fit, could grasp the palmar aspect of the mitt in its normally flexed fingers, thus preventing it from falling off; indeed, this may be the reason for the design of the mitts.

The second weakness is also related to the snugness of fit, because it was thought that the garments were probably made to measure. If the mitts were part of the layette, then they must have been made to a predesigned pattern, modelled on another infant, or guessed. It was not possible to verify these points, but in order to test the theory of guesswork 29 experienced midwives were asked to draw an estimated pattern for an infant; their results were measured, and a mean mitt circumference of 10.4 cm., with a range of 6.7 to 14.5 cm., was obtained. These results are larger than the mitts, and indicate that perhaps the seventeenth- and eighteenth-century seamstresses were better guessers than modern experienced midwives. If these figures be accepted then it means there is an approximate error of overestimation of 12% (10.4 cm. being 1.2 cm. more than the presumed hand circumference of 9.2 cm. of the 95 newborn infants, whose mean weights equalled those of the mitt wearers). Therefore, if an allowance of 12% be made

*The Publications of the Harleian Society, Registers, vol. 10, A true register of all the christenings of the Parishe of St. James, Clerkenwell, 1701–1754.

†The Publications of the Huguenot Society of London, vol. 11, Registers of the Church of La Patente, Spitalfields, 1898.

for the mitt wearers then their mean weights have been overestimated by 15 oz. (0.419 kg.).

The authorities consulted (curators, keepers, and owners of costume collections) agreed that the mitts came from well-to-do families, as in the case of most preserved garments; a lace mitt—the only one in the series—from the London Museum was thought to have been used at the baptism of George III. Thus the comparison made is between infants of the upper social level in the pre- and early Industrial Revolution era and infants of a predominantly working-class population from the mid-twentieth century.

Conclusions

Newborn infants of the seventeenth and eighteenth centuries, by the methods used, are estimated to have been equal in size to infants of the mid-twentieth century. It is possible that the present-day infants may even be larger, but they are certainly not smaller than those of 200 to 300 years ago.

I wish to thank Professor Alan Moncrieff for his encouragement, Dr. Colin Hindley, who helped with the statistics, and Mr. Donald King and Miss J. Macnab, of the Victoria and Albert Museum, for assistance and access to their materials. Dr. M. Dynski-Klein and Dr. A. D. Barlow allowed me to use children under their care, for which I am grateful. In addition my thanks are due to the curators and staffs of the following museums: the London Museum; the Gallery of English Costume, Platt Hall, Manchester; the National Museum of Ireland, Dublin; the City Museum and Art Gallery, Birmingham; the Castle Museum, Norwich; not forgetting those who searched in vain.

Reports of Societies

PREVENTION AND MANAGEMENT OF TETANUS

A joint meeting of the Sections of Neurology and Experimental Medicine and Therapeutics of the Royal Society of Medicine was held on May 13 to discuss "Tetanus." Professor J. V. DACIE was in the chair.

"Tetanos Post-sérique"

Professor G. PAYLING WRIGHT (London) gave an account of some of the limitations in the common practice of passive prophylaxis against tetanus with antitoxic serum (A.T.S.) and discussed the immunological features that may underlie the occurrence of cases of *tetanos post-sérique*. He pointed out that the modern techniques of labelling foreign proteins with radioactive isotopes and fluorescent dyes now enabled their fate after inoculation to be followed with much greater precision than formerly. As a result of such studies, it was apparent that foreign proteins such as tetanus antitoxic horse globulins were removed from the circulation and destroyed in the tissues much more rapidly on their second or subsequent administration. Whereas a first dose of 1,500 units of A.T.S. might be expected to confer protection for two to three weeks afterwards, a second dose would be lost in a much shorter time. It was this accelerated destruction of antitoxin, well within the usual incubation period of the disease, that probably accounted for many of the cases of *tetanos post-sérique*.

As an instance of a failure to appreciate the phenomenon of "immunological education," with its more rapid destruction of the foreign antigen, Professor Payling Wright referred briefly to a case of tetanus which had occurred after the usual prophylactic dose of A.T.S. and which had been reported in the *British Medical Journal*.* He urged that once a person had received an injection of any horse-serum antitoxin, irrespective of the disease for which it might have been given, that person should be subsequently immunized against diphtheria and tetanus with the appropriate toxoid. Once a person had been injected with horse-serum proteins no reliance could be placed upon his protection by A.T.S. should he be subsequently exposed to risk of tetanus.

Drugs for Relieving Spasm

Dr. D. R. LAURENCE (London) discussed the need for an experimental approach in judging the value of drugs in the treatment of tetanus, stressing the meaninglessness of reporting successful results achieved by polypharmacy with drugs of unknown potency in single cases. He described an ingenious technique for producing local tetanus in rabbits injected with toxin. Their response to a standard afferent stimulus allowed him to carry out quantitative electromyographic comparisons of the potency of different drugs. The ideal drug should invariably abolish spasms without interfering with respiration or abolishing consciousness. Such a drug was not yet available, but he had found that the phenothiazine derivatives, such as chlorpromazine, were by far the best in abolishing spasms and were superior to other centrally acting muscle relaxants such as mephenesin. A new compound, acetylpromazine, was superior to chlorpromazine, but had not yet undergone clinical trial. The phenomenon of tachyphylaxis—failure to respond to a previously satisfactory dose—occurred if phenothiazine drugs were given more often than about every two hours, and very large doses might even produce excitation. In a patient whose spasms had been abolished by thiopentone, reactivation could be repeatedly brought about by stressful conversation, and the spasms disappeared again when the subject was reassured. This underlined the importance of relief of anxiety in the general management of the patient with tetanus.

Professor E. B. ADAMS (Durban) reported the results of a carefully controlled clinical trial of chlorpromazine, barbiturates, and chloral hydrate in the treatment of nearly 200 patients with tetanus admitted during the past two years to the King Edward VIII Hospital, Durban. His impression was that a mixture of barbiturates and chlorpromazine was better than either drug alone, and moreover smaller doses of each could be given. In neonatal tetanus, where the mortality is notoriously high, there was a slight bias in favour of barbiturates. Chlorpromazine could be given intravenously if necessary and was very dramatic in controlling laryngeal spasm. No side-effects had been encountered, but the total daily dose should not exceed 1 g. in adults. Supportive therapy in the form of A.T.S., penicillin, and oxygen was given, and oral feeding was used if possible.

In trying to assess the value of any new form of treatment in tetanus it was important to take into account prognostic criteria, such as the period of onset and the intensity of the spasms, he continued. The earlier the onset the higher the mortality, whereas in patients with little or no spasm death was unusual. Many of the reports in the literature were difficult to assess because these factors had not received sufficient attention. Another point that needed more study was the immediate cause of death; very often nothing obvious was found at necropsy, and it might be that some patients, especially in the younger age groups, died as a result of over-treatment. In some cases death could be attributed to respiratory complications, hyperpyrexia, or circulatory failure; exhaustion from spasms seemed an unlikely cause.

Artificial Respiration

Dr. A. CRAMPTON SMITH (Oxford) began by pointing out that new methods of treatment have really had little dramatic effect on the overall downward trend in mortality rate from tetanus. Any new therapy must therefore be put forward cautiously, and its value assessed against the known dangers of the disease. For this reason the Respiration Unit at Oxford had selected seven very severe cases whose

*Littlewood, A. H. M., Mant, A. K., and Wright, G. Payling, *Brit. med. J.*, 1954, **2**, 444.

spasms could not be controlled by other means for treatment with muscle relaxants and intermittent-pressure respiration. Four of them had recovered completely, and this was considered encouraging. The technique, however, was expensive in both time and money, and could be carried out only in suitably staffed and equipped centres. The patient was anaesthetized and then completely paralysed with a curariform drug. A cuffed endotracheal tube was inserted and artificial respiration applied by an anaesthetist. The patient could then be transported to the Unit (even severe cases could travel in this way), where a tracheotomy was carried out and the positive-pressure apparatus set up. Very careful nursing, attention to feeding, and strict biochemical control were necessary. The worst thing from the patient's point of view was that he could do nothing for himself—not even communicate—but this form of treatment could be continued satisfactorily for at least three or four weeks.

Nova et Vetera

ROYAL DENTAL HOSPITAL AND SCHOOL

The opening of the extension to the Royal Dental Hospital of London School of Dental Surgery by the Queen, on June 3 was a memorable event in a series of anniversary commemorations.

The Royal Dental Hospital of London was opened on December 1, 1858. Ten months later, on October 1, 1859, there came into existence at the hospital the London School of Dental Surgery. This was the first dental school with full facilities for practical instruction and the acquisition of clinical experience to be opened in Great Britain. The twin institutions of hospital and school owed their being to the founders of the Odontological Society of London, which was established on November 10, 1856, for the purpose of rescuing dentistry from the chaotic condition into which it had fallen at that period.

The general standard of dental practice was extremely low. The extraction of aching teeth was all that dentistry comprised in the minds of the vast majority of the population, and it was commonly carried out by blacksmiths, tinkers, chemists and druggists, cuppers, chiropodists, and by itinerant quacks. Even those who had served some sort of apprenticeship practised dentistry on tradesman-like principles, issuing the most blatant advertisements and writing their names on their shop fronts in decayed teeth. The skill and renown of a few exceptional men only served to throw into greater relief the appallingly low standard of practice of the great majority.

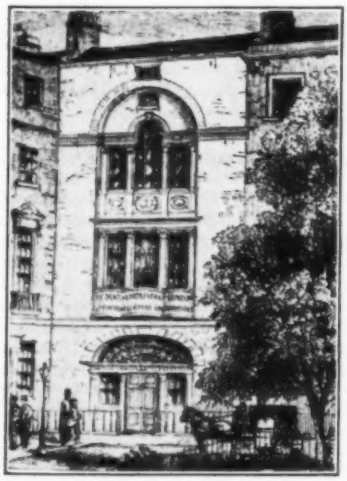


FIG. 1.—Dental Hospital, Soho Square.

The task which faced the founders of the Odontological Society was nothing less than the creation of a dental profession with defined standards of education, training, and ethics. It was recognized that the only method of achieving this aim was the drawing up of a curriculum which would lead to a professional diploma in dentistry; this in turn necessitated the establishment of a hospital and school. The select band of reformers who succeeded in raising dentistry from a trade to a profession included Sir John Tomes, Sir Edwin Saunders, W. A. Harrison, Arnold and Thomas Rogers, the two Samuel Cartwrights, and several members of that remarkable dental dynasty the Parkinsons. It was due to these men, and to Tomes's friend James Moncrieff Arnott, F.R.C.S., that a curriculum and a dental licence (L.D.S.) were established under the aegis of the Royal College of Surgeons.

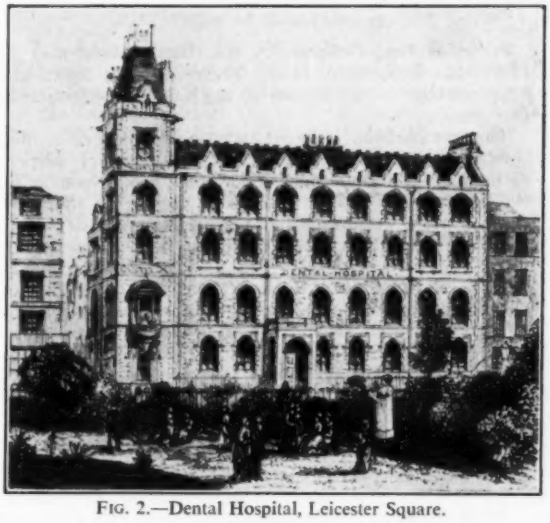


FIG. 2.—Dental Hospital, Leicester Square.

The first home of the Dental Hospital (1858–74) at 32, Soho Square (Fig. 1) was the beautiful town house of Sir Joseph Banks, P.R.S.; its second was a converted soup-kitchen in Leicester Square (Fig. 2). The present building was opened in 1901; and in the same year the hospital was granted the title of Royal. The Odontological Society, which had shared the hospital premises in Soho Square and Leicester Square, moved into those of the Royal Medical and Chirurgical Society, and six years later it became the Odontological Section of the newly formed Royal Society of Medicine. In 1911 the school was admitted as a School of the University of London. On July 5, 1948, when the National Health Service Act came into force, the Royal Dental Hospital became part of the St. George's Hospital group, and the school was incorporated as an autonomous body.

ASSOCIATION OF POLICE SURGEONS

The Association of Police Surgeons of Great Britain held its seventh annual conference in Eastbourne, from May 29 to 31, under the presidency of Dr. R. D. SUMMERS. On the first day, Dr. JOSHUA CARSE spoke on "A New Approach to Psychiatric Practice for Adults." Dr. MARY MOFFETT then opened a discussion on the Wolfenden Report. The next day, Dr. WALTER HEDGCOCK introduced a debate on *aides-mémoire* and questionaries for examining "drunks-in-charge," during which Mr. C. H. H. BUTCHER discussed the legal implications of standardized examination and report forms. There was a large majority vote against the adoption of a national standardized *aide-mémoire* for this purpose. On the last day of the meeting Mr. NORMAN RAE, chief crime reporter of the *News of the World*, gave a revealing talk on crime reporting.

At the annual dinner the toast of the Association of Police Surgeons was proposed by Dr. DONALD TEARE; Dr. R. HUNT-COOKE proposed the County Borough of Eastbourne, to which the Mayor, Councillor J. W. G. HOWLETT, replied. For the guests Mr. R. W. WALKER, Chief Constable of Eastbourne, replied to the toast proposed by Dr. F. M. P. MARSHALL.

To-day's Drugs

In this column we publish from time to time authoritative notes on a selection of new drugs.

Primodos Oral (Schering A. G., Berlin, distributed by Pharmethicals, London, Ltd.).—These are sugar-coated tablets containing norethindrone 10 mg. and ethinyl oestradiol 0.05 mg.

This combination of progestogen and oestrogen is most commonly used for the diagnosis of pregnancy when a period has become overdue. Two tablets are given daily for two days; if the patient is pregnant there is no effect, but if she is not a withdrawal bleeding occurs a few days later. Although fears have been expressed that this procedure might injure the embryo when used in early pregnancy, there is no convincing evidence that this could happen. Clearly this method of pregnancy diagnosis cannot be used if there has been some bleeding. Similar treatment has been advocated for the induction of "periods" in cases of secondary amenorrhoea, the treatment being repeated at monthly intervals for 4–6 months, or as long as necessary. It may be ineffective in long-standing secondary amenorrhoea. The two drugs would be much cheaper prescribed separately.

Bilostat (Weddel Pharmaceuticals).—One tablet contains dehydrocholic acid 0.25 g. **Bilevac** (Weddel Pharmaceuticals).—One tablet contains sodium tauroglycocholate 1 gr. (65 mg.), rhubarb ½ gr. (32 mg.), aloin 1/10 gr. (6.5 mg.), peppermint oil q.s.

A distinction must be made between cholagogues such as magnesium sulphate, which act by stimulating the gall-bladder to contract and so discharge bile into the duodenum, and choleretics, which increase the output of bile by the liver. Dehydrocholic acid, a synthetic oxidation product of cholic acid, is a powerful choleretic which also increases the blood flow to the liver. Bile itself and the naturally occurring bile salts sodium taurocholate and sodium glycocholate are less effective choleretics. None of these substances is a purgative, and there is no evidence that laxatives have any choleretic action.

The value of choleretics in the treatment of diseases of the liver and gall-bladder is uncertain. They are clearly undesirable in complete obstruction of the biliary passages and probably so when active hepatitis is present. Preparations containing both purgatives and bile salts are presumably intended for ill-defined dyspeptic states such as that termed liverishness by the lay public, and it is doubtful if the addition of the bile salts improves the efficiency of a "vegetable laxative pill." Benefit has been claimed from the use of dehydrocholic acid in partial obstruction of the common bile duct and in recurrent attacks of cholangitis, when the increase in the flow of bile is thought to have a "flushing" effect. The place of choleretics in the treatment of chronic cholecystitis and cholelithiasis has never been critically assessed, and it is difficult to understand how they could be of value.

Tampovagan N (Camden Chemical Co. Ltd.).—Vaginal pessaries, each containing neomycin 20 mg. in a fatty base.

Neomycin, an antibiotic chemically related to streptomycin, has a bactericidal action against a number of Gram-positive and Gram-negative bacteria. It is relatively non-toxic when applied locally and has little tendency to cause sensitization, while resistance to it is so far uncommon. The main indication suggested for its use in pessary form is vaginitis of mixed bacterial origin which proves resistant to other forms of therapy. It would be advisable to perform sensitivity tests before prescribing it.

Correspondence

Because of heavy pressure on our space, correspondents are asked to keep their letters short.

Television Collapse

SIR,—In the past 12 months I have seen no fewer than five patients who had collapsed with substernal pain and shock while they were watching television. In each case there was a reasonable presumption of coronary occlusion, but in none was this diagnosis confirmed. Three were subsequently proved to have hiatus hernia and the remaining two were left with the label of vaso-vagal attack. The link between these cases was that each was a man who had eaten a heavy meal shortly before the attack commenced, and had then sat down in a low chair to watch the programme. One of the patients with hiatus hernia had injudiciously consumed two bottles of a popular fizzy drink in quick succession shortly before he was taken ill. All of them recovered in due course.

The occurrence of these misadventures draws attention to a television hazard. The viewer has a tendency to select a "comfortable" armchair which is low and deep from front to back, and the seat sometimes even slopes backwards, so that the buttocks are below the level of the knees. This attitude is mechanically unsound, for it is bound to lead to upward pressure on the diaphragm, particularly when the stomach is overfull. The old-fashioned straight-backed chair with a firm seat is far more suitable for viewing. The average console model is so constructed that the screen is much too close to the floor, with the result that the viewer is compelled to sit in a low chair or else to look downwards at the picture, and this can become a strain if this position is maintained for long. It would encourage proper seating if screens were set considerably higher than is usual at present, with the centre of the screen at least 42 in. (77 cm.) from the floor.

It is to be noted that the effort of viewing is not necessarily a relaxation in the physical sense of the term. The man sitting down reading a book is able to relax because he can choose his own pace, but the viewer is necessarily carried along at the pace set by the producer, so that he is very likely to become tense at times according to the type of programme being watched.—I am, etc.,

London, N.W.1. JAMES MAXWELL.

Out-patient Gynaecology

SIR,—The article on "Out-patient Gynaecology" (*Journal*, May 3, p. 1038) by Mr. Norman Morris and Dr. Desmond O'Neill and the letter from Mr. Albert Davis (*Journal*, May 17, p. 1177) are interesting examples of the differing, almost opposite, attitudes with which we approach many of our patients. The two authors claim that, if careful clinical examination of out-patients is combined with skilled psychiatric appraisal, at least 40% complain of symptoms, many of them entirely subjective, without any discoverable organic cause but with clear evidence of emotional tension. On the other hand, Mr. Davis claims that the use of chemical, microscopic, and other diagnostic aids would reveal a "fine pathology" in most of the cases of "tension" enough to account for their symptoms. He might mention, for example, pituitary-ovarian hormonal disturbance, prolonged endometrial shedding, and neuritis of the pelvic sympathetic plexus, none of which can be discovered by clinical examination. He might also support (he must correct me if I am wrong) that the symptoms due to an undetected pathology are the cause of the emotional tension, chiefly through fear of what underlies the pain, bleeding, or amenorrhoea, or even that tension is so common amongst gynaecological patients that it can usually be discovered if sought with sufficient persistence and bias.

To take one example, it is undoubtedly true that if a woman complaining of menorrhagia without physical signs is curetted

towards the end of a prolonged menstruation, endometrial pathology such as prolonged shedding may be found. But in over half of A. M. Sutherland's 1,000 cases of menorrhagia[1] he could find no endometrial abnormality whatever.

There is no doubt that tension can and does interfere with normal functions of any viscus, whether it be heart, stomach, colon, or pelvic organs, and should it continue, intense and prolonged, the disordered function is likely to provoke actual pathology. The real problems are, firstly, do tension and anxiety exist with symptoms (and signs) as a coincidence; secondly, do the woman's complaints cause the anxiety; and, thirdly, does an external stress, such as domestic unhappiness, initiate the disturbed function which gives rise to symptoms? The answer to the first question is, perhaps; to the second, yes: quite often we know that some indefinite pain, of no importance in itself, slowly builds up the fear of cancer which eats away an otherwise quiet mind. There is the emotional tension.

Thirty-eight years of out-patient practice have convinced me that a large number, perhaps the majority, of gynaecological out-patients suffer many varied symptoms as a result of fear and anxiety. This is especially true of those who are polysymptomatic. The good results following reassurance are sound evidence. Seldom is it that organic pathology can account for many unrelated symptoms. Now one of the authors of the article, Mr. Norman Morris, has distinguished himself by valuable scientific research on uterine blood flow, which demands a coldly objective capacity for accurate observation, and therefore his (and Dr. O'Neill's) opinions on clinical problems are unlikely to be clouded by woolly conclusions unfounded on careful assessment of each patient.—I am, etc.,

London, W.1. ALECK BOURNE.

REFERENCE

[1] Sutherland, A. M., *Glasg. med. J.*, 1949, **30**, 1.

SIR,—I should like to congratulate Drs. Norman Morris and Desmond O'Neill (*Journal*, May 3, p. 1038) on a bold and courageous investigation and paper. Their statement, so succinctly expressed and well proven, that the majority of women sent to gynaecological out-patient departments for pelvic complaints suffer, in fact, from emotional disturbances, will not surprise general practitioners. It will confirm our usually unvoiced suspicion that much of our "physical" treatment, in gynaecology and otherwise, is just a fobbing off of patients and their emotional problems, either because we do not understand them or because they are too tough for us to handle.

It is really most remarkable: a large number of women with pelvic complaints are seen by general practitioners; the majority of them are dealt with on the spot—without much "physical" treatment; a certain number are sent to out-patient departments, and now we hear that, out of 60 such women referred, at least 42 are cases of emotional disorder without significant pelvic abnormalities and who do not require the type of physical treatment a gynaecologist can give. No wonder out-patient departments are packed and waiting-lists long! This is a very serious challenge to us general practitioners. We practise the very substance of medicine, and yet out of 60 women 42 whose emotional problems might have been dealt with by their family doctors were referred to the wrong agency, the gynaecologist.

We all know there is too little time, hardly any training, and very few postgraduate facilities for the study and treatment of emotional and personality disorders in general practice. But we shall have to cope somehow with this, the most pressing medical problem of our time. We should be grateful to Drs. Morris and O'Neill for bravely speaking up in the wilderness where they will meet with much opposition, as already shown by the letter from Mr. Albert Davis (*Journal*, May 17, p. 1177). Mr. Davis is lucky in not being a general practitioner, otherwise some of his statements such as "there are few 'functional' menstrual disorders which cannot be regulated by curettage and hormone therapy" and "appropriate operative treatment will cure the majority of cases" (of pelvic pain) would boomerang right back at him. Were he a general practitioner he would—as we do—see the women troop back to their family doctors after physical treatment and operations with the same complaints or better ones (e.g., "adhesions") again and again.—I am, etc.,

Southall, Middlesex. MAX B. CLYNE.

Value of Bronchoscopy

SIR,—Many thanks are due to Dr. A. R. Somner *et al.* for their lucid account of bronchoscopic methods and findings (*Journal*, May 10, p. 1079), but they make no mention of general anaesthesia. The value of general anaesthesia in overcoming the fear of the procedure is inestimable. Topical analgesia and heavy premedication will give excellent operating conditions, especially if the sitting-up position is used, as in a dental chair, because the dyspnoeic patient dislikes lying flat. However, there are always a few nervous people who must be put to sleep, as it is virtually impossible to spray them efficiently. These less stoical souls tend to spread fear among other patients in the ward or clinic, making the chest physician's task more difficult. Dr. C. H. C. Toussaint assures me that, since we changed over to general anaesthesia five years ago, with a knowledge of the short-acting relaxant succinylcholine chloride, his work at the Willesden Chest Clinic has been greatly simplified, and there have been no complaints of frightening ordeals. Patients will accept a second bronchoscopy at a later date if necessary.

My general anaesthetic technique is as follows: Premedication is with pethidine, 100 mg., and scopolamine, 0.43 mg. A Gordh's needle or Robertshaw adapter mounted on a number 12 needle is inserted into a suitable vein; minimal barbiturate and succinylcholine chloride are given; the patient is saturated with oxygen; the glottis is exposed and sprayed down to the carina, using a bronchoscopic spray. A "neoplex" Harris type No. 10 English (18 French) gauge catheter is passed, and 10 litres of oxygen per minute insufflated during bronchoscopy. (This type of catheter is stiff enough to pass without a stilette and will stand boiling.) By these means cyanosis is avoided and the bronchoscopist is unhurried. He has anything from five to a maximum of ten minutes for his examination and biopsies. The reason for the topical spray to the glottis and carina is to reduce post-operative cough, especially the hacking type which can occur. The patients do not leave the theatre until they are biting on the airway, nor the precincts of the theatre until the airway is ejected. Post-biopsy haemorrhage is dealt with by the application of adrenaline swabs and suction until it ceases and the patient's reflexes are returning. With a very short general anaesthetic the danger of severe haemorrhage is no greater than with topical analgesia alone.

There are other methods of oxygen administration during bronchoscopy. One is the use of a wide-bore adapter with a watch-glass eyepiece, which may be plugged into a Negus-type bronchoscope. This allows controlled respiration and is a great comfort to the anaesthetist, if the bronchoscopist delays in order to teach. The Pinkerton cuirass is another method. It is most important to appreciate that the anaesthetist and bronchoscopist must share the airway with complete co-operation until the patient's respiration returns to normal. Where the bronchoscopist refuses to allow the anaesthetist to oxygenate the patient and ignores cyanosis, it is probably best to stick to topical analgesia alone, because the safety of the examination depends on the avoidance of anoxia.—I am, etc.,

London, N.W.10. R. D. LEVIS.

Treatment of Fat Embolism

SIR,—We recently used heparin in the treatment of two patients with fat embolism who made a rapid and satisfactory recovery. Our technique differed from that of Mr. R. H. Sage and Mr. R. W. Tudor (*Journal*, May 17, p. 1160), in that we gave only 2,000 units of heparin intravenously every four hours. An increase in the dose of heparin results in an increased production of clearing factor until there is a maximum response, after which any increase in the dose

of heparin is valueless with respect to the production of clearing factor.[1] Therefore the ideal dose of heparin is that which will just produce the maximum amount of clearing factor and hence have a minimum anticoagulant action. We chose 2,000 units as our standard dose, bearing in mind the fact that a mere 400 units of heparin would produce measurable amounts of clearing factor,[2] but we do not know if this is the ideal dose.

We have found by *in vitro* studies that clearing factor is produced by our method of treatment, and because of the small dose of heparin we have not encountered haemorrhage at the fracture sites.—We are, etc.,

HAROLD COHEN.
C. F. I. SPARLING.

Sheffield 1.

REFERENCES

1 French, J. E., Robinson, D. S., and Florey, H. W., *Quart. J. exp. Physiol.*, 1953, **38**, 101.
2 Baker, Saul P., *Circulation*, 1957, **15**, 889.

Felonious Suicide

SIR,—Your leading article (*Journal*, May 24, p. 1225) plainly states the doctor's attitude to suicide, with which few will disagree. You mention that during the past three or four decades coroners' juries have shown increasing reluctance to bring in verdicts without the qualification "while the balance of his mind was disturbed." The necessity for a jury in cases of suicide was done away with in 1926 by the Coroners' (Amendment) Act, Section 13. Juries are hardly ever summoned unless there is doubt about the suicidal act; for example, where the deceased has been killed by a train or car, or in cases of murder and suicide. This makes it difficult to see the basis of your assertion. The eagerness to find insanity is much older than 40 years, and came from the desire to avoid forfeiture and the barbarity of crossroad burial. As you say, forfeiture came to an end in 1870, and the Interments (Felo de Se) Act, 1823, abolished the desecration of the corpse. The shibboleth "while the balance of his mind was disturbed" has no real meaning or legal force and was borrowed from the Infanticide Act of 1922. It only persists to mollify the feelings of relatives, and is often unsupported by evidence. Some coroners have discontinued its use, preferring the simple "killed himself," without presuming to express what may be regarded as a psychiatric opinion given without examining the patient.

The percentage of charges in cases of attempted suicide is so extremely low that it must be explained by reluctance to enforce an unpopular law. My own experience in hundreds of cases of suicide is that the police, like the medical profession, are deeply sympathetic to this human phenomenon.

I question your implication that Scotland's low suicide rate is connected with the fact that suicide is not a crime in Scots law. The suicide rate in Denmark, Austria, and Switzerland is more than double that of England and Wales, and suicide is not a crime in any of these countries. Without disagreeing with your main theme, I suggest that the criminality or otherwise of suicide has little to do with its incidence. The reason for the great variation in suicide rates between countries is not known. The rate of a given country tends to remain fairly constant. Durkheim[1] suggests that each social group has a collective inclination of its own for the act. It is impossible to expand this proposition here, and reference may be made to the original classic work. With the present popular interest in suicide there is a grave risk that facile explanations, such as loneliness, housing conditions, or loosening of religious beliefs, will be bandied about for political ends. The truth is that suicide is a most complex phenomenon and highly unpredictable; our knowledge of its roots is scanty indeed.—I am, etc.,

GAVIN THURSTON,
H.M. Coroner,
County of London (Western District).

London, W.6.

REFERENCE

1 Durkheim, Emile, *Le Suicide*, 1897, Paris.

Management of Tetanus

SIR,—In Dr. M. B. Azami's recently reported case of tetanus (*Journal*, May 17, p. 1176) violent spasms with opisthotonos and trismus were recovered from under treatment by means of A.T.S. together with other remedies, including chlorpromazine. No surgical treatment was given to the presumed site of infection owing to its situation (the middle ear). In his letter Dr. Azami alludes to two other instances of severe generalized tetanus, reported by Drs. R. S. Packard, T. B. Cartmill, and J. G. Henry (*Journal*, January 4, p. 16), which also recovered under A.T.S. and modern therapeutic methods, including chlorpromazine. It is also noteworthy that in these two cases no local treatment was given to the wound. In one of them, the possible site of infection was a local dental analgesic; and in the other it is stated that local debridement of the wound was not performed. Thus in these cases, in which there was no interference with the wound, recovery took place from severe generalized tetanus.

These cases may be compared with the series of 100 cases reported from Ibadan by Johnstone,[1] with a mortality of more than 50% (*Journal*, January 4, p. 12). In this series it is stated that the treatment of the wound was carried out as indicated for the particular wound, irrespective of the occurrence of tetanus. It is a reasonable inference that in a proportion of the cases the surface of the wound was subjected to various forms of active surgical interference and that this may have had an unfavourable influence. This view receives support from other records; including a group of war cases which I reported in 1916.[2] From these it appears that in tetanus (apart from amputation in suitable cases) it may be advisable to restrict the local treatment of the wound to irrigation, sloughs being allowed to separate. Recovery of severe cases took place amongst the war cases under these methods, together with A.T.S. On the other hand, evidence is lacking of the recovery of severe cases after active surgical treatment of the wound.

It may well be that advances in therapeutic methods will render more hopeful the treatment in tetanus, but the management of the wound still requires consideration, and should always be recorded.—I am, etc.,

R. G. ABERCROMBIE.

Sheffield.

REFERENCES

1 Johnstone, D. D., *Brit. med. J.*, 1958, **1**, 12.
2 Abercrombie, R. G., ibid., 1916, **1**, 339.

Carcinoma of the Stomach

SIR,—I think the brief account of the following case to be of interest from two angles, the natural history of carcinoma of the stomach and the single appearance of one classical symptom thereafter, never to reappear.

A man aged 36, previously healthy, attended a doctor complaining of a small haematemesis occurring that morning on arising. The blood was dark and clotted, in quantity about half a cupful. Questioning elicited no other symptoms, clinical examination was negative, so he was reassured and no further investigations undertaken. The date of this episode was February 6, 1957.

He remained well until March 29, 1958, when he came to me complaining of severe vomiting over the previous five days. He had not, however, vomited any blood. On further questioning he admitted that his appetite had been poor for the past three months and during this time he had lost 20 lb. (9 kg.) in weight. He was admitted to hospital the next day, where further investigations were performed prior to laparotomy on April 14. This revealed an inoperable adenocarcinoma involving the whole of the lesser curvature of the stomach with widespread secondary infiltration. He survived an anterior gastro-enterostomy and was discharged from hospital on April 26, symptomless and apparently well. Unfortunately the prognosis is very poor, but nevertheless he will have survived at least 14 months and possibly in the end 18 to 20 months after the appearance of the first symptom. This fact, plus the interval of nearly one year of apparent health, I hope makes this case worth recording.

—I am, etc.,

A. E. BENNETT.

Angus.

Dangers of "Preludin"

SIR,—We should like to draw your attention to dangers which may result from "preludin" (tetrahydro-3-methyl-2-phenyl 1:4 oxazine), a drug which is widely advertised for the treatment of obesity and which can be bought without a doctor's prescription. An increasing number of our patients have recently volunteered the information that they have been taking it without medical supervision. Many more admit, when questioned, that they take it regularly. Sometimes it was prescribed initially by a doctor; often a friend recommended it or a chemist sold it when asked for "slimming pills."

The drug only appears to have a limited value in treatment of obesity. We have not found it useful in treating patients in the obesity clinic of this hospital. Yet many patients demand it even when the scales show that it is having no effect whatever on their obesity. One reason for its popularity seems to be that in some patients it induces euphoria and a desire for physical activity. To maintain these sensations increasing doses are often required. We have seen patients who admit that they take 15-20 tablets per day instead of the recommended two. These patients tend to become nervous and sleepless, which they are aware is due to the drug, yet they continue to take it. One case of toxic psychosis resulting from preludin has already been reported.[1] The dangers of taking the drug, even in the prescribed dose, over a long period, have yet to be revealed. Moreover, preludin is expensive. Twenty 25-mg. tablets cost 5s. We have seen one patient who has got into debt as a result of her craving for preludin. She was spending 35s. per week on it.

What finally precipitated this letter was a patient seen recently who, when asked whether she had ever taken slimming pills, replied, "Only the white ones that everybody takes." These were preludin.—We are, etc.,

St. James' Hospital, London, S.W.12. A. KAHAN.
ANN G. MULLINS.

REFERENCE
[1] Bethell, M. F., *Brit. med. J.*, 1957, **1**, 30.

An Aid to Auscultation?

SIR,—While examining patients lying on electric blankets I noticed a tingling sensation at my finger-tips as they made contact with the patients' skin. The sensation was one of slight stickiness or roughness, with an element of vibration. This occurred when the electric blanket was switched either on or off so long as it remained plugged into the mains and there was no earth connexion. This phenomenon only occurred with alternating current.

Some time later, while examining a patient whose iron mattress was being used as a radio aerial and connected through a radio receiver to the mains, I noticed a similar sensation. In all these cases the application of a diaphragmatic stethoscope chestpiece to the skin produced magnification of the vibration and a loud humming was heard in the earpieces. The hum varied in intensity and pitch, depending on the viscus over which it was held and whether or not air was present—the humming could only be produced by a small gliding movement of the chestpiece. After experimenting with several patients the following observations were noted: (1) In pyrexia the hum was loud and clear; (2) congestion or consolidation of the lung could be recognized by the character of the hum; (3) similarly, over the abdomen, changes in the character of the bowel could be recognized. Obviously the body is picking up a charge from the live mains lead, the hum being the A.C. cycle of rapid positive and negative charges in rhythm with the A.C. cycle. As a positive charge is concentrated on a surface with greatest curvature and spreads itself equally on the inner side of a sphere, so the rapid charging and discharging caused by the A.C. current sets up sympathetic vibrations in neighbouring structures, which resonate, the pitch depending on the state at that time of the object resonating.

This phenomenon may be a useful diagnostic aid, and by using a small metal plate on one side of the body in conjunction with a metallic diaphragmatic chestpiece on the other one could learn more about the state of an air-carrying viscus than with an ordinary stethoscope.—I am, etc.,

London, N.W.11. B. E. FINCH.

Dynamometry and Oscillometry

SIR,—May I congratulate you on your excellent idea of publishing together, in the *Journal* of April 5 (pp. 785–797), five papers by leading specialists on various aspects of vascular disease of the brain? But not one of them mentions some perfectly safe and reliable method of diagnosis. Not only is the well-known importance of the retinal picture not mentioned, but Bailliart's dynamometry is also completely ignored. The latter allows the pressure of the central artery, and therefore of the ophthalmic artery, to be measured safely, and this may be of great help in the diagnosis of cerebral vascular disease.

The writers discuss hyper- and hypotension, but we have three blood pressures—the systolic, the *mean*, and the diastolic. The mean—or efficient blood pressure—is more important than the diastolic, and again it can safely be examined in the living eye with a Bailliart dynamometer. The mean blood pressure can be determined only by oscillometry, and oscillometry will often reveal vasospasm in some parts of the body. I have cases of sciatica that were due to angiospasm, and these, once recognized, were quickly cured after weeks or months of pain. Oscillometry is better than ordinary palpation. In my experience Pachon's oscillometer is the best.—I am, etc.,

London, N.W.11. N. PINES.

Pulseless Disease

SIR,—On an occasion when I was spending a good deal of time in the various medical wards at St. Bartholomew's I was sitting by the bed of a man (my recollection is that he was middle-aged) feeling his right radial pulse, when quite suddenly it stopped; there was no obvious change in his condition. I thought I must have been mistaken and that I had been feeling my own pulse in my finger-tips, and should have left it at that; but as I went to leave the ward the Sister came to me to ask if I had noticed anything unusual in the pulse; she had had the same experience the previous day.

At the post-mortem examination a dissecting aneurysm of the innominate extending into the subclavian was found.—I am, etc.,

Salisbury. R. FOSTER MOORE.

Pyrexia Agitans

SIR,—I was called by a nervous woman this week to see her daughter aged 6 who had been suffering from a febrile illness for six days. I had seen her on two previous occasions at the start of the illness, when I diagnosed a "virus infection," having excluded all the obvious possibilities (including a urinary infection). On the second visit she was obviously getting better and I had told her mother so.

On the sixth day the mother rang up to say her temperature was still nearly 100° F. (37.8° C.). On checking the child's temperature my thermometer read 98.2° F. (36.8° C.). I took the child's temperature again with the mother's thermometer and made it 98.7° F. (37.1° C.). The mother then queried the accuracy of my thermometer, and, having a spare thermometer in the car, I took a further reading with the third thermometer, which read 99.6° F. (37.5° C.). Finally, a fourth reading with the thermometer which was used initially returned 100.2° F. (37.9° C.). On each occasion the thermometer was kept under the tongue for two minutes. I took no further readings, as the child was naturally getting restless. The child is now back at school and we have stopped taking her temperature. She appears to be very well.—I am, etc.,

Oxford. A. P. MILLAR.

Acute Appendicitis

SIR,—The article on acute appendicitis by Mr. J. A. Campbell and Mr. D. C. McPhail (*Journal*, April 12, p. 852) was much appreciated, although I feel that one aspect needs comment. While it is conceded that the temperature and pulse rate are not very valuable guides in the early diagnosis of appendicitis, I wonder whether the authors are justified in stating that such a high proportion (70%) of the patients in their series were apyrexial. Their criterion for the upper limit of normal axillary temperature is 98.6° F. (37° C.) which I think is too high, and possibly accounts partly at any rate for the high percentage. My impression is that the mean average axillary temperature is considerably lower than this, and I personally would regard a patient, lying in bed, with an axillary temperature of 98.6° F. (37° C.) as pyrexial.—I am, etc.,

Porthcawl. JOHN H. OWEN.

Halothane Concentration

SIR,—Dr. John Bullough (*Journal*, May 17, p. 1180) certainly gives some interesting figures for the resistance to respiration in various pieces of anaesthetic apparatus. Unfortunately he does not mention the actual rates of flow of the gases for the resistances he gives, and this is most important.

Before deciding to use the Rowbotham's inhaler actually in the closed circuit I took the trouble to measure the resistance during an actual anaesthetic. Using both a water manometer and the gauge from a Maxwell artificial-pneumothorax box I found that the maximum resistance without the Rowbotham vaporizer in the circuit was little over 1 cm. of water, and with the vaporizer in the circuit this was only increased to 1.5 cm. water. The patient was breathing at the rate of twelve respirations a minute and at a tidal volume of approximately 300 c.c. Surely these figures are the best answer to Dr. Bullough's theoretical criticism of this method.—I am, etc.,

Worthing. F. R. GUSTERSON.

Azacyclonal in Schizophrenia

SIR,—I am grateful to Drs. S. Gray and A. D. Forrest for the courtesy of their reply (*Journal*, May 10, p. 1123) to my original letter (*Journal*, April 12, p. 891). I am particularly interested to read that Dr. Forrest is conducting an experiment with phenothiazine derivatives and is using a placebo plus psychotherapy as a control. I feel it is only by such methods that a proper appraisal can be made of any new drug in chronic schizophrenia.

The statement by Drs. Gray and Forrest that they have not seen any published data contradicting their opinion on the merits of azacyclonal in chronic schizophrenia requires elucidation. In their original paper (*Journal*, February 15, p. 374) the authors quoted from Rinaldi *et al.*,[1] who conducted a controlled clinical trial of azacyclonal and undoubtedly demonstrated its value in chronic schizophrenia.—I am, etc.,

Larbert, Stirlingshire. W. B. WRIGHT.

REFERENCE

[1] Rinaldi, F., Rudy, L. H., and Himwich, H. E., *Amer. J. Psychiat.*, 1955, **112**, 343.

British Qualifications Abroad

SIR,—Your correspondent Dr. I. M. Griffith (*Journal* May 10, p. 1124) is deceived if he believes that all native American physicians qualify to the same standard; that they all acquire the letters M.D. is admitted, but that is another matter. If they wish to make the whole Union their oyster there are further state licensing examinations at each move across the state lines, unless reciprocity obtains, or perhaps the National Board examination to contemplate as a medical *laisser-passer*. Our arrangements are at least as tidy, if not better.

Surely it is a valuable service to the man who finds that he cannot satisfy his own university examiners to provide an independent examining body to which he can repair? Far from sharing a common standard, universities vary considerably in the emphasis laid on subjects in the curriculum. Some students I knew enjoyed three terms of embryology lectures; I am very glad this was not imposed on me. No, leave us our extra-mural qualifications (including the Scots and Irish bodies which your correspondent forgot to mention). They have more than their considerable age to recommend them. Perhaps some M.R.C.S. readers will regale us with tales of their wild youth. I had no idea they were such a reckless crew.—I am, etc.,

Ramsbottom, Lancs. ANGUS DUNN.

Medical Jargon

SIR,—I have read Dr. A. G. Freeman's article on the symptoms and clinical aspects of diabetes mellitus (*Journal*, May 17, p. 1149) with interest, but I confess that I would have enjoyed it more if diabetic patients had not been repeatedly described as "ketosed" and "non-ketosed." These terms, presumably derivatives of the verb "to ketose," are very ugly, and it was therefore with some anxiety that I searched the medical dictionaries for evidence of their existence. I am glad to say that I found none, for there is no mention of them either in the *Faber Medical Dictionary* (London, 1953), or in *Blakiston's New Gould Medical Dictionary* (New York, 1956).

These words are therefore both ill-favoured and ill-begotten and should, I think, be abandoned at once. It would be a tragedy if through repeated use they were to become accepted medical terms. As an alternative, surely it is pleasanter to read of diabetic patients with or without ketosis than that they are "ketosed" or "non-ketosed."—I am, etc.,

Northampton. J. R. TASKER.

Failure of an Incubator Thermostat

SIR,—Our interest was caught by the medico-legal note in your issue of May 17 (p. 1186) reporting the inquest on an infant who died in an incubator which was not equipped with an audible warning system.

A committee of the British Standards Institution, which includes representatives from the medical and nursing professions and hospital authorities as well as industrial and technical experts, has recently drafted a proposed British Standard for babies' incubators which makes a number of important provisions for temperature control and gives requirements for both audible and visible warning systems. It is expected that the final British Standard will be published in two or three months' time.—I am, etc.,

S. G. WILLBY,
Press Officer,
London, W.1. British Standards Institution.

POINTS FROM LETTERS

Chain-store Glasses

Dr. M. MELGRAVE (Dagenham, Essex) writes: I desire to support Mr. John Primrose (*Journal*, April 19, p. 943). I was on the old B.M.A. Ophthalmic List from January, 1929, to July, 1948. I recollect that a circular was originally received from Mr. Bishop Harman suggesting that special hours be set aside for the great flow of anticipated work. In the upshot I saw two or three cases per week. . . . The reasons people go to the opticians are (1) custom, (2) the mass suggestion of the mysterious and showy set-up of the shops, and (3) the fact that the majority of the cases consist of the easy presbyopics. . . . If this Opticians Bill is allowed to go through, it simply means that testing by properly qualified medical men, already deferred for one generation, will be deferred indefinitely. The profession is asleep.

Obituary

LORD WEBB-JOHNSON, G.C.V.O., C.B.E., D.S.O.

Hon.LL.D., M.B., Ch.B., F.R.C.S.

Lord Webb-Johnson, consulting surgeon to the Middlesex Hospital and President of the Royal College of Surgeons from 1941 to 1949, died at his home in London on May 28. He was 77 years of age.

Few surgeons of this or any other generation have exerted so much influence on the progress of surgical organization in Great Britain as Lord Webb-Johnson. With a very clear vision of what was attainable he showed remarkable executive ability in achieving what he set out to do. His great part in the rebuilding of the Middlesex Hospital and in the development of the Royal College of Surgeons would alone make his name memorable, but also of notable importance were his efforts to raise the standards of surgical training and to obtain reciprocity in the requirements needed for the higher surgical examinations in the various Colleges of Surgeons in Great Britain and in Australia.

Rosalind Maingot.

Alfred Edward Johnson was born on September 4, 1880, the son of Dr. Samuel Johnson, who graduated in Dublin and later became medical officer of health for Stoke-on-Trent. His mother's maiden name was Webb, and he took the combined name by which he was always known. Educated at Newcastle-under-Lyme High School, he thereafter had a distinguished student career at Owens College, Manchester, gaining the Tom Jones scholarship and the Dumville surgical prize. Graduating M.B., B.Ch. with honours at the Victoria University, Manchester, in 1903, he gained the English F.R.C.S. in 1906. At the Manchester Royal Infirmary he was house-surgeon, casualty house-surgeon, and surgical registrar, and he also held a university teaching post as demonstrator of operative surgery. About this time he published his first paper in the *British Medical Journal*: on appendicitis at sea. In the same year, 1908, he was writing on the nature, prevention, and treatment of shock. Deciding to pursue his surgical career in London, he took the post of resident surgical officer at the Middlesex Hospital. Here he soon made many friends and showed such capabilities that he was elected to the honorary surgical staff as assistant surgeon in 1911. A keen member of the Territorial Force, he went out to France during the early stages of the first world war. Eventually he became a colonel and was appointed a consulting surgeon to the British Expeditionary Force. He was three times mentioned in dispatches, gained the D.S.O. in 1916, and was appointed C.B.E. in 1919. As one result of his wartime experience he was awarded a Hunterian professorship in surgery and pathology at the Royal College of Surgeons, where he lectured on the surgical complications of typhoid and paratyphoid fevers. This lecture formed the substance of a book which was published in 1919. From 1946 to 1957 he was chairman of the Army Medical Advisory Board.

After the first world war Webb-Johnson became dean of the Middlesex Hospital Medical School at a time when great changes in that school and in the hospital were impending. The hospital needed to be rebuilt, and when everyone else was despondent about raising the funds required Webb-Johnson remained optimistic, stimulated others to enthusiasm, and by approaching many whom he knew to be able and willing to help obtained large sums to complete the building. He took a great interest in the actual details of the rebuilding, and when, in 1935, the structure was completed his colleagues and friends and admirers made him a presentation in honour of the event and the great part he had taken in it. He was knighted in the following year, and in 1945 he was made a baronet. In 1941 he was elected a vice-president of the Middlesex Hospital.

But already Webb-Johnson was turning his attention to wider fields of service. In 1926 he became a member of the Court of Examiners of the Royal College of Surgeons, and in 1932 was elected a member of council. In 1939 he visited Egypt to inspect the medical schools there on behalf of the College and then went on to Australia to deliver the Syme Oration. During all these years he was making useful contacts with surgeons at home and abroad. In 1940 he was re-elected to the College council, and in the same year he delivered the Bradshaw Lecture on "Pride and Prejudice in the Treatment of Cancer," later published in this journal. In 1941 he succeeded Sir Hugh Lett as President. At that time the buildings of the College had just been badly damaged by enemy action, and large portions of the structure lay in ruins. It was quite impossible to obtain the material for complete rebuilding—even if it had been wise to attempt it—but the new President very quickly had such repairs done as made the College buildings habitable, particularly arranging for the remoulding of the beautiful ceiling in the library. The destruction of part of the College led him to think of the need for large buildings which might form a suitable centre for wider activities, and in which perchance the other Royal Colleges might be induced to find a new home. With this idea in view additional property adjoining the College was acquired as opportunity offered. The President then issued an appeal for funds to rebuild the College. He himself made a noble donation, and the members of council and other Fellows of the College helped to give the appeal a good start. The response to it from all over the world was enthusiastic.

Webb-Johnson's next step was to establish the College as a great postgraduate teaching centre in surgery. Owing to the generosity of one of his patients, Sir William H.

Collins, he was able to arrange for the endowment of two professorships, of pathology in 1943 and of anatomy in 1945. The museum was correspondingly divided into compartments under the care of the two new professors. Thereafter it was possible to arrange for regular courses of advanced lectures on surgery and allied subjects. Within a year or so the College became a centre of activity, full of eager postgraduate students from all parts of the world; and the library, formerly half-deserted, now showed hardly a vacant seat. A popular and useful innovation was the provision of meals at moderate cost within the College precincts. Then the President turned his attention to the content of the primary examination for the Fellowship, and after due deliberation the council decided to alter the examination in pure physiology to one in applied physiology and pathology, which was more in keeping with the needs of the surgeon. The next project was to alter the constitution of the council to bring it more into touch with the various special branches. In due course representatives chosen from the radiologists, anaesthetists, gynaecologists, oto-laryngologists, dental surgeons, and general practitioners were invited to attend the council meetings, and in 1947 were made regular co-opted members, and to these was added a representative of the ophthalmologists.

Webb-Johnson's next achievement (in 1947) was the institution of a Faculty of Dental Surgery within the College and the inauguration of an examination for a Fellowship of the College in Dental Surgery. The faculty later instituted a Webb-Johnson Lecture to commemorate the indebtedness of the dental profession to Lord Webb-Johnson. In 1948 the newly formed Faculty of Anaesthetists made the College its headquarters. Webb-Johnson was recently made an honorary Fellow of both these new faculties. Another change, made after consultation with the appropriate bodies, was the institution of special examinations for the F.R.C.S. in ophthalmology and in oto-laryngology. It was also in 1947 that publication of the *Annals of the Royal College of Surgeons* was begun; in this monthly journal the activities of the College were recorded, and many of the important lectures delivered there were published. The painting of the council of the Royal College of Surgeons by Mr. Henry Carr was presented to Sir Alfred Webb-Johnson, as he then was, in 1947.

It was well known that one of the projects which Webb-Johnson had much at heart was the building of a joint home for all three Royal Colleges to further in particular the creation of an Academy of Medicine. Circumstances, however, prevented this, so he directed his constructive skill to planning the rebuilding and extension of the College and the building of a resident hostel for students, particularly for postgraduates from overseas. A temporary hostel in one of the neighbouring houses was opened in 1949, and the future of the projected hostel was assured by the munificent gift of Lord Nuffield, who was so convinced by Webb-Johnson's plea for the need of such an institution that he gave £250,000 to help towards it, and the College of Surgical Sciences now bears his name. It was the President's constant aim to make the College a surgical and social centre where postgraduate students from all over the world could see and mingle with the chief surgeons in this country. In 1949 he gave up the presidency of the College, having held that office for longer than any former President. In the following year he received a reward he greatly prized, the Honorary Medal of the College: by a happy decision of the council a similar unique honour was conferred on Lady Webb-Johnson a year or two later. Last year he was admitted a member of the Court of Patrons of the College.

In the war effort of 1939–45 and in the sphere of medical politics Lord Webb-Johnson played an important part. He served on many B.M.A. committees, among them the Medical Planning Commission set up in 1940. For a time he was vice-chairman of the Negotiating Committee, and up till two years ago he was a member of the Central Medical Recruitment Committee. At a very critical stage in the negotiations between the Ministry of Health and the medical profession just prior to the establishment of the National Health Service he joined with the Presidents of the other two Royal Colleges in writing a letter to Mr. Aneurin Bevan, then Minister of Health, in an attempt to form a bridge between the two opposing camps. Undoubtedly he strove to the full extent of his power to secure the best possible terms for the profession. In 1948 Webb-Johnson was made a peer and entered the Upper House as Lord Webb-Johnson of Stoke. He created a record by taking part in a debate in the House within half an hour of his being introduced as one of its members.

To list all the distinctions and honours which came to Lord Webb-Johnson would be a formidable task: the one he himself prized most highly was that of being Surgeon to Queen Mary, who several times visited the College during his presidency. Created K.C.V.O. in 1942, he was promoted G.C.V.O. in 1954. He was an Honorary Fellow of the Royal Colleges of Surgeons of Edinburgh and Ireland, of the Royal Australasian and Canadian Colleges of Surgeons, of the American College of Surgeons, and of the Royal Faculty of Physicians and Surgeons of Glasgow. Honorary degrees were conferred on him by the Universities of Liverpool and Toronto. At one time he was an examiner in surgery at Cambridge, and he was an honorary member of many foreign surgical societies and learned bodies. Elected president of the Royal Society of Medicine in 1950, he held that office for two years and was again a driving force in obtaining the funds for important structural alterations. In 1953–4 he served as president of the History of Medicine Section at the Royal Society of Medicine. A very active president of the Royal Medical Benevolent Fund, he was also president of Epsom College. In the House of Lords he was an authoritative and amusing speaker, and in debate was always ready to speak on behalf of the medical profession. Lord Webb-Johnson rose to high rank in the Order of St. John, having been Hospitaller of the Grand Priory in the British Realm and a Knight of Justice. He was gazetted one of the ten Bailiffs Grand Cross in 1955. He also held posts of honour in the world of Freemasonry.

Lord Webb-Johnson had a complex personality with many facets, and it took some time to realize the fullness of his character. Affable, sociable, sympathetic, and a very good mixer, he sometimes adopted a light tone of banter which tended to hide the essential seriousness of purpose which was the mainspring of his life. He took long views and worked steadily and indefatigably towards his aim. He made friends easily and kept them in spite of differences of opinion. He was a ready speaker and had a marvellous memory for people. His efforts on behalf of the Royal College of Surgeons entitle him to be considered one of the greatest of the many famous Presidents who have watched over and guided its interests. We can summarize his achievements by quoting what was said of him when in 1946 he was given the Honorary Membership of the Liverpool Medical Institution:

"Some surgeons live on in their students, lighting a candle in their minds and hearts which can never be put out. Some are numbered among the few who in various ways help to push forward the advancing edge of their subject. Some are remembered for their leadership in wider issues of medicine and of medical policy. Alfred Webb-Johnson qualifies on all three counts."

In 1911 he married Cecilia Flora, daughter of Mr. D. G. MacRae, of Norbiton, Surrey, and she survives him. There is no heir to the barony.

We are indebted to Sir GORDON GORDON-TAYLOR for the following appreciation: It would be impossible to compress the whole of Alfred Webb-Johnson's colourful life-story within the compass of a few lines, but perhaps as Alfred's friend and colleague for fifty years I shall not appeal in vain to the Editor of the *British Medical Journal* for the courtesy of a little space wherein to endeavour to pay a tribute to my very distinguished contemporary. I first met Webb-Johnson in November, 1906, when we both

successfully cleared the hurdle of the final Fellowship examination, an event duly commemorated half a century later by the members of the College Council Club, who presented each of us with a pair of gold cuff-links and a massive birthday cake appropriately ornamented with the arms of the College. The selfsame evening 18 months ago was also remarkable for the fact that the date nearly coincided with the quarter of a century that had elapsed since we simultaneously took our seats on the Council, and from a lowly place in its ranks he sped rapidly upwards *ad astra*.

In the earliest days of 1908 our brief examination acquaintance was renewed by his appointment to succeed me as resident medical officer at Middlesex Hospital, an office which I had held for only a month or two but which he was to occupy for upwards of three years. He had already been attracting the notice of the surgeons of his own University of Manchester as Dumville surgical prizeman and by the award of the Tom Jones surgical scholarship, which he utilized for an investigation into the fate of buried ligatures and sutures. He had been surgical registrar to "The Manchester Royal" and private assistant to the well-known neurosurgeon, Sir William Thorburn. Although this first appointment of his at Middlesex Hospital was not destined to provide him with much operating experience, it gave him opportunity to develop his natural flair for administration and organization, and certain extensive building operations in connexion with the hospital's cancer wing financed by the Barnato-Joel Trust, which commenced soon after the dawn of his "Middlesex" association and in which he himself played a very energetic role, gave him his first insight into the possibilities of bricks and mortar and laid the foundations of his later extraordinary knowledge of architecture, engineering, and all that concerns the science and art of building. Was it by design or was it just his own impish spirit that made him select his subsequent home next door to the Royal Institute of British Architects? Though in every sense a general surgeon, he had exhibited from the first a urological penchant and in the days before the first world war had visited the urological clinics of Berlin, Vienna, and Berne—he was one of the first in Britain to interest himself in pyelography. Soon after the close of the 1914–18 war he established a urological clinic at the Middlesex Hospital and was its first "chief." Excellent surgeon though he was, "Webb-J." was cast in a much larger mould than that of the ordinary hospital surgeon. He had enjoyed a lengthy and honourable association with the Army: he had been officer commanding the Middlesex Hospital Officers' Training Corps, officer commanding the world-famous 14th General Hospital at Wimereux, and in the last 18 months of the 1914–18 war one of the two consulting surgeons to the important Boulogne Base.

Much as he did for "Middlesex"—including the establishment of professorial chairs in its medical school, the rebuilding of the hospital when age had threatened the safety of its walls (a programme which was carried through without the closure of a single bed and which involved the expenditure of considerably more than a million of money, three-quarters of which he raised himself by his own efforts), his skilful chairmanship of the hospital building committee, his strenuous participation in every single step of the rebuilding, so that he might almost be said to have laid every brick himself, his vision in providing "Middlesex" with its Woolavington Wing for private patients—yet, despite this noble array of achievement for the hospital of Charles Bell and Bland-Sutton, I am sure that it would be with the Royal College of Surgeons of England that he himself would have desired his name to be especially linked. Luck may have brushed him with her wings in respect of the particular office which he happened to hold in the College at the time of the disaster of May, 1941, but happily the right man was at hand to retrieve, restore, and re-create. Like Field-Marshal Montgomery, Webb-Johnson was always one battle ahead in his planning, and while London was still falling about the ears of its inhabitants Webb-Johnson behind his baffle-wall in Portland Place and amid the ruins and open spaces of Lincoln's Inn Fields was already planning a new and better college.

In few men, certainly in no surgeons, have so many master qualities been combined. In addition to his skill as a surgeon, he was supremely interested in medical education, and in view of his long membership of the College Council and the unparalleled duration of his presidency he had very special knowledge of postgraduate surgical education, and his dreams of a residential college in Lincoln's Inn Fields for surgical pilgrims from overseas and in our midst were realized through his own energies and the financial support of Lord Nuffield. He was one who "walked with kings, nor lost the common touch." His friends were as numerous as the sands of the seashore. His kindness of heart and his business acumen led to his membership or chairmanship of bodies as dissimilar as Epsom College, the Royal Medical Benevolent Fund, or the directorate of the Savoy. He was a patron of the arts, often seen at Covent Garden; he knew the art galleries of France and Italy as well as the treasures of the National Gallery and the Tate; a connoisseur of silver, he had a special pride in the silver treasures of the College of Surgeons. He could boast a good knowledge of the best literature, possessed a remarkable memory, and was a devoted "Kiplingite"—for Kipling had been his friend as well as his patient. On the public platform and as President of the College he would have scorned to read an address or speech, and I never saw him with a note or piece of paper on any important occasion. He was a charming host, an entertaining conversationalist; he combined a strange medley of the emotional and the intransigent and inflexible, at one moment a tear or a sob punctuating his discourse and at another time revealing the sang-froid of a political pachyderm to the barbs of those who ventured to be his hostile critics. He far excelled Lord Knutsford, at one time hailed as "the prince of beggars," and the huge sums of money which he obtained for the Middlesex Hospital, for the College of Surgeons, and for the Royal Society of Medicine attested his skill as a pleader for good and worthy causes. The dignity and aplomb which he brought to the presidential chair were greatly enhanced by the charm and graciousness of Lady Webb-Johnson, who so loyally and conscientiously accompanied him on every great occasion. In the years of failing health he transferred his chief interests to securing an appropriate setting for what remained of Hunter's collection after the "blitz" and to the work of the Hunterian Trustees, paying almost daily visits to Lincoln's Inn Fields. His great interest in this work was shown in a practical manner by the generous MacRae-Webb-Johnson Gift.

Webb-Johnson's death has robbed the surgical world of its most dazzling figure in this tide of time. There has never been anyone quite like him, and many moons may wax and wane before another with all "Webb-J.'s" manifold gifts again fills the horizon of the world of surgery. On one façade of the Château at Versailles may be read these words: "A toutes les gloires de la France." "A toutes les gloires du Collège Royal des Chirurgiens de l'Angleterre" was his watchword during the strenuous years of his presidency, and by reason of his leadership and achievement posterity may acclaim his presidency as the greatest of all time, for he has left behind him a hive of industry and enthusiasm in Lincoln's Inn Fields, and he gave a soul to what had hitherto been little more than a remarkable museum and a rendezvous for examiners and surgical aspirants.

JAMES WOOD-WILSON, T.D., M.D., D.P.H.

Dr. J. Wood-Wilson, county medical officer and principal school medical officer to the County Council of the West Riding of Yorkshire, died suddenly at Wakefield on May 23. He was 54 years of age.

James Wood-Wilson was born on March 25, 1904, and studied medicine at Glasgow University, graduating M.B.,

Ch.B. in 1927, and three years later obtained the D.P.H. After two years as assistant medical officer at the City of Glasgow Robroyston Sanatorium, he took up the appointment of assistant tuberculosis officer to the West Riding County Council in 1932. In the following year he proceeded M.D. He became assistant administrative county medical officer in 1936, being responsible for the school medical and maternity and child welfare services. As a major in the R.A.M.C. of the Territorial Army he was embodied in September, 1939, and became a hygiene specialist, but in May, 1941, at the request of his local authority, he was unconditionally released from the Forces to take up the appointment of deputy to the county medical officer, and he held this post until 1954, when he was appointed county medical officer.

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Dr. Wood-Wilson had much to do with the planning and development of the well-known West Riding of Yorkshire scheme for the preventive medical services, and the monthly meetings of the divisional medical officers under his chairmanship were indeed a flowing together of ideas. A member of the British Medical Association since 1927, he had served on the executive committee of the Wakefield, Pontefract and Castleford Division, and was chairman of the Division from 1949 to 1951. His sound advice on matters affecting administration and his experience of committee work were invaluable in guiding the Division, and it was a rare occasion when he was absent from a committee meeting. A keen member of the Society of Medical Officers of Health, he was president of the Yorkshire Branch in 1952–3. He was also chairman of the tuberculosis group of the Society in 1954 and 1955, and a member of the Joint Tuberculosis Council. On his appointment as county medical officer he became a member of the Association of County Medical Officers. He was a Fellow of the Royal Society of Health.

In 1954 Dr. Wood-Wilson was instrumental in establishing the standing subcommittee on co-operation between medical practitioners and medical officers of the West Riding County Council, and was recently elected chairman of this subcommittee. Through this organization and his regular attendance at liaison meetings between medical officers of health and of the Leeds and Sheffield Regional Hospital Boards he found a ready medium for the expression of his great interest in medical ethics and the unification of effort of the different branches of the National Health Service. In 1948 he was the captain of the Wakefield golf club and in his leisure moments was often to be found on the golf course. On the reconstitution of the Territorial Army he again became the medical officer to the 4th Battalion King's Own Yorkshire Light Infantry, being awarded the Territorial Decoration and clasp, retiring only on reaching the age limit. He leaves a widow, a son, and a married daughter.

J. L. writes: Dr. James Wood-Wilson was an eminent and well-loved member of the public health service. A man of a wide variety of interests, and possessing a very keen intellect, he brought to his work both abundant kindness and sympathy. He was tolerant and understanding, with the result that a friendly relationship was built up with all those with whom he came into contact. Of great good humour and limitless patience, he possessed the happy ability of being able to see the other person's point of view. His untimely death is greatly mourned by the entire staff in the West Riding health department.

H. KIRKPATRICK, M.B., B.Ch., L.M.

Major B. J. BOUCHÉ, I.M.D. (retired), writes: I wonder if you will permit me to add a few words of tribute to Lieutenant-Colonel Henry Kirkpatrick, whose obituary was printed in the *Journal* of May 24 (p. 1240)? "Kirk," as his students, myself among them, fondly referred to him, was an outstanding man. The humblest student could take to him any problem of pathology which worried him with the confidence that he would be received with courtesy and consideration. Kirkpatrick took both the junior and senior courses in pathology, and his clear enunciation and facility in drawing impressive diagrams on the blackboard made it apparent how complete a master of the subject he was. As one of the physicians of the General Hospital, Madras, he was always regarded with affection and trust, for he was a model of gentleness.

PHILIP GARSON, F.R.C.S.Ed., D.L.O.

The obituary of Mr. Philip Garson was printed in the *Journal* of May 24 (p. 1241).

K. W. M. writes: By the early death of Philip Garson, Liverpool has lost not only one of its most distinguished clinicians but one to whom was given the trust of all his professional brethren. They also gave him their affectionate admiration for his courage in the face of illness which meant the recurrence of such suffering as would have paralysed the spirit of most but at its worst never daunted him.

Medico-Legal

BLOOD TESTS AND LEGITIMACY

SCOTTISH APPELLATE COURT'S DECISION

[FROM OUR LEGAL CORRESPONDENT]

Last year we reported a case heard in the Scottish Court of Session in which Lord Wheatley relied almost wholly on blood-test evidence in reaching his decision (*Journal*, August 17, 1957, p. 419). Lord Wheatley's decision has now been reversed on appeal (*The Times*, March 27).

A Most Unusual Action

The facts of the case were highly unusual, and in order to appreciate the course of the action it is necessary to recapitulate them. In 1951 Alexander Mitchell married a girl with whom he had for some time been enjoying sexual relations and who some three weeks before the marriage had given birth to a daughter. At the time the child was conceived the mother, according to her, had been enjoying sexual relations with a Pole as well as with Mr. Mitchell. The marriage was not a success. Mrs. Mitchell was divorced in 1951 on the ground of her adultery with a Mr. Imre, and in the divorce suit Lord Guthrie held that the daughter had been legitimated by the 1951 marriage and awarded custody to Mr. Mitchell. Thereafter the daughter was looked after by Mr. Mitchell's sister, and the mother married Mr. Imre. The mother did not defend the divorce proceedings or fight the issue of custody before Lord Guthrie.

It is against this background, and in the light of the principle that the Courts both in England and in Scotland are properly most reluctant to make decisions which turn into bastards *ex post facto* children till then regarded as legitimate, that the proceedings on Mrs. Imre's action for a declarator that her own daughter was illegitimate, because it was the Pole and not Mr. Mitchell who had fathered her, have to be considered. The reason the proceedings were brought, as Mrs. Imre frankly avowed in the witness-box before Lord Wheatley, was to circumvent Lord Guthrie's

custody order of 1951 and to get the child, now 9 years old, out of the care of Mr. Mitchell's sister so that she could have her to live in the Imre home. There had been difficulties over Mrs. Imre's access to the child.

As the Lord President, Lord Clyde, observed in his judgment on the appeal, this was fortunately an unusual type of action, in many respects unique, and there was no precedent in Scotland for a mother resorting to such a form of proceeding. Blood tests, however, had been carried out on Mr. Mitchell, Mrs. Imre, and the daughter, and the doctors' evidence was that unless this was a case of mutation, the chance of which was about 1 in 100,000, Mr. Mitchell could not be the father. Lord Wheatley relied on the medical evidence and decided in favour of Mrs. Imre, although he did not believe her own evidence about the Pole.

The Presumption of Legitimacy

In his judgment in the Appellate Court the Lord President pointed out that whereas here a husband married his wife because he believed, and was led by his wife to believe, that he is the father of her child there is an almost irresistible presumption in favour of legitimacy, and to establish the contrary calls for far more than the normal onus of proof. Had the question been an ordinary matter of the onus of proof the medical evidence might have been enough, but in his opinion the blood tests were not sufficiently infallible to overcome it.

In this case the ABO and rhesus tests turned out to be negative and proved nothing. On the MN test the experts reached the conclusion that the child's blood contained none of the factors found in the sample taken from Mitchell, and therefore concluded that he was not the father.

In considering the infallibility or otherwise of the MN test the Lord President said that the evidence was that it had been recently ascertained that the factors in a child's blood might change, and it was impossible to tell how often this might have happened in the past. Moreover, a misleading result might be obtained owing to the presence of a factor in a weak form which the test results did not disclose. One at least of the doctors called on Mrs. Imre's behalf would have desired an additional sample of blood to confirm the results of the first test. In the circumstances he could not regard the blood-test evidence as sufficient to displace the presumption of legitimacy. Lord Carmont, Lord Russell, and Lord Sorn delivered concurring opinions.

Lord Carmont and Lord Russell further held that the blood-test evidence ought not to have been admitted at all by reason of the circumstances in which the blood samples had been taken. It was clear that Mitchell did not appreciate the possible results of submitting to the taking of samples and was not told that he was entitled to refuse. It was also clear that no one who had the legal right to do so had consented to samples being taken from the child. The child's *curator ad litem* had professed to give consent. This was doubly irregular and improper, for not only has a *curator ad litem* no control whatsoever over the person of his ward but he never even entered an appearance in the case and so had no *locus standi* to give permission anyway.

The Lord President, while not ruling that the evidence thus obtained was inadmissible, expressed considerable hesitation about its admissibility.

No Heavy Defeat For Science

It is wrong to regard this decision as a heavy blow to scientific evidence in general and to blood-test evidence in particular. The presumption of legitimacy, as the court stressed, is a very strong one, and a worse example of a litigant putting forward a case entirely inconsistent with the whole of her previous conduct, on the strength of which her husband had acted, it would be difficult to imagine. With the dice thus loaded, any admitted possibility that the MN test was not conclusive, any doubt about the actual testing procedures used, would give the Court an acceptable occasion for not allowing its results to contradict what on the face of it would be the plain justice of the case.

When scientific evidence is relied on to try to produce a result which laymen would regard as unfair, those who adduce it must show it to be practically infallible. The expert evidence of the MN test in the Imre case gave two examples of its fallibility.

Vital Statistics

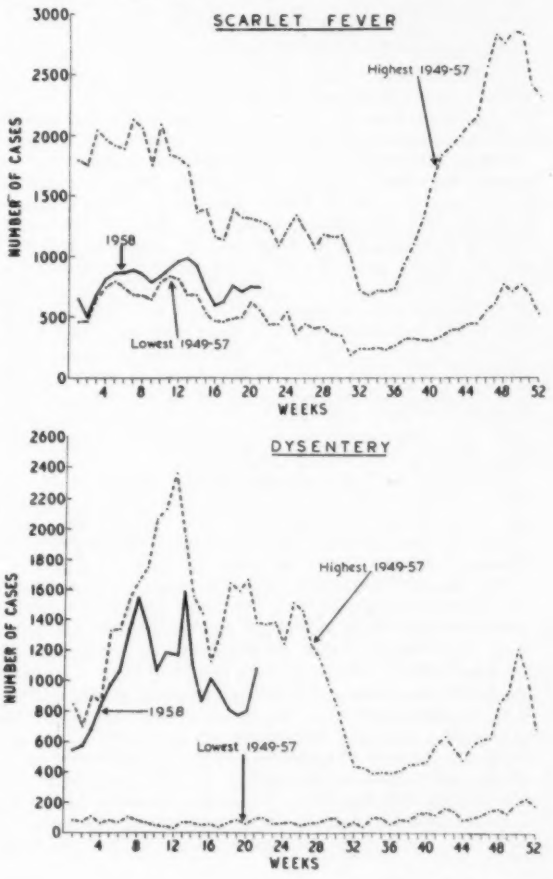
Industrial Accidents and Diseases

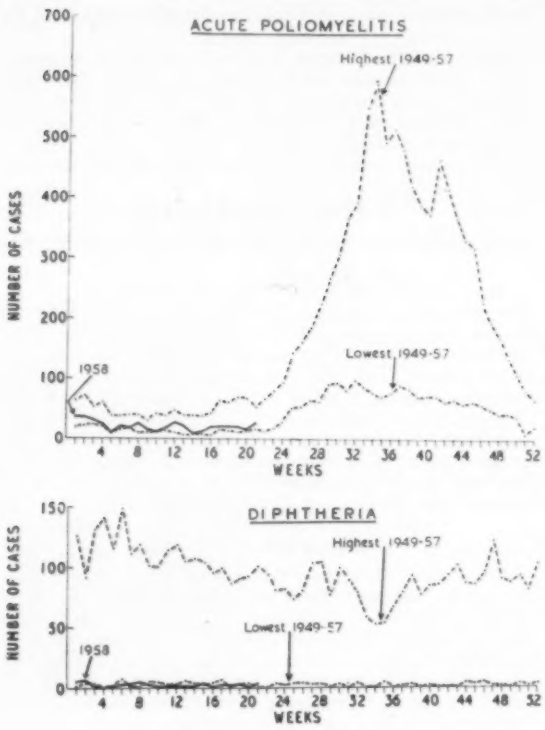
The number of workpeople (other than seamen) in the United Kingdom whose deaths from accidents in the course of their employment were reported in April was 104, compared with 121 in the previous month and 138 in April, 1957.

The numbers of cases of industrial diseases in the United Kingdom reported during April, 1958, were as follows: lead poisoning 3, compressed air illness 1, anthrax 1, epitheliomatous ulceration 14, chrome ulceration 20; total 39. There was one death from epitheliomatous ulceration due to mineral oil.—*Ministry of Labour Gazette*, May, 1958.

Graphs of Infectious Diseases

The graphs below show the uncorrected numbers of cases of certain diseases notified weekly in England and Wales. Highest and lowest figures reported in each week during the years 1949–57 are shown thus ------, the figures for 1958 thus ———. Except for the curves showing notifications in 1958, the graphs were prepared at the Department of Medical Statistics and Epidemiology, London School of Hygiene and Tropical Medicine.





Week Ending May 24

The largest rises in the number of notifications of infectious diseases in England and Wales during the week ending May 24 were 689 for measles, from 4,559 to 5,248, and 277 for dysentery, from 803 to 1,080, and the largest fall was 20 for food-poisoning, from 197 to 177.

The largest increases in the number of notifications of measles were 160 in London, from 436 to 596 (Islington 196, St. Pancras 87), 104 in Essex, from 88 to 192 (Thurrock U.D. 64), 78 in Lancashire, from 421 to 499 (Liverpool C.B. 189), 74 in Middlesex, from 281 to 355 (Willesden M.B. 62), and the largest decreases were 108 in Westmorland, from 114 to 6, and 65 in Norfolk, from 166 to 101. The number of notifications of whooping-cough was 611, being 6 more than in the preceding week, and there were no large fluctuations in the local trends. The notifications of scarlet fever numbered 743, 6 fewer than in the preceding week, and the largest local fluctuation was a rise of 20 in Yorkshire West Riding, from 90 to 110. Four cases of diphtheria were notified, 3 more than in the preceding week, and 3 of these cases were notified in Plymouth C.B.

The notifications of acute poliomyelitis numbered 28, and these were 9 more for paralytic and 3 more for non-paralytic cases than in the preceding week. The largest returns were Yorkshire West Riding 7 (Leeds C.B. 3, Halifax C.B. 2), London 5 (Paddington 2, Wandsworth 2), Lancashire 4.

The largest outbreak of dysentery during the week was 137 cases in Chigwell U.D. The chief centres of infection were Yorkshire West Riding 206 (Barnsley C.B. 33, Wortley R.D. 24, Rotherham C.B. 19, Sheffield C.B. 16, Leeds C.B. 14, Bradford C.B. 11, Queensbury and Shelf U.D. 11), Lancashire 194 (Manchester C.B. 60, Liverpool C.B. 38, Oldham C.B. 32, Whitworth U.D. 15, Worsley U.D. 11), Essex 146 (Chigwell U.D. 137), London 91 (Wandsworth 23, Southwark 11), Surrey 55 (Banstead U.D. 34), Staffordshire 50 (Kidsgrove U.D. 23), Shropshire 36 (Oswestry M.B. 30), Cheshire 36 (Wallasey C.B. 12), Gloucestershire 34 (Bristol C.B. 34), Warwickshire 32 (Birmingham C.B. 18, Nuneaton M.B. 10), Durham 30 (Hartlepool M.B. 17), and Middlesex 22.

INFECTIOUS DISEASES AND VITAL STATISTICS

Summary for British Isles for week ending **May 17** (No. 20) and corresponding week 1957.

Figures of *cases* are for the countries shown and London administrative county. Figures of *deaths* and *births* are for the whole of England and Wales (London included), London administrative county, the 17 principal towns in Scotland, the 10 principal towns in Northern Ireland, and the 14 principal towns in Eire.

A blank space denotes disease not notifiable or no return available.

The table is based on information supplied by the Registrars-General of England and Wales, Scotland, N. Ireland, and Eire, the Ministry of Health and Local Government of N. Ireland, and the Department of Health of Eire.

CASES	1958 Eng. & Wales	1958 Lond.	1958 Scot.	1958 N. Ire.	1958 Eire	1957 Eng. & Wales	1957 Lond.	1957 Scot.	1957 N. Ire.	1957 Eire
Diphtheria	1	0	2	0		4	1	2	0	3
Dysentery	803	67	207	15	6	750	41	264	12	4
Encephalitis, acute	2	0		0		1	0		0	
Enteric fever:										
Typhoid	2	1	0	0		2	0	2	0	
Paratyphoid	7	0	3(B)	0		1	0	3(B)	0	
Food-poisoning	197	33	12	2		226	31	21	0	
Infective enteritis or diarrhoea under 2 years				7	23				17	34
Measles*	4,559	436	172	55	31	16,665	869	181	317	148
Meningococcal infection	17	2	7	1	2	25	5	13	0	3
Ophthalmia neonatorum	27	1	5	1		31	3	8	0	
Pneumonia†	243	15	135	9		374	20	177	16	4
Poliomyelitis, acute:										
Paralytic	12	2	4	1	2	48	4	2	2	2
Non-paralytic	4	0				18	2			
Puerperal fever§	179	20	10	0		193	30	8	3	1
Scarlet fever	749	49	68	31	14	664	46	55	38	19
Tuberculosis:										
Respiratory	689	71	112	21		622	73	344	41	
Non-respiratory	83	4	3	7		93	5	22	12	
Whooping-cough	605	40	51	16	36	2,258	101	229	9	87

DEATHS	1958 Eng. & Wales	1958 Lond.	1958 Scot.	1958 N. Ire.	1958 Eire	1957 Eng. & Wales	1957 Lond.	1957 Scot.	1957 N. Ire.	1957 Eire
Diphtheria	0	0	0	0		No comparable figures available.	0	0	0	0
Dysentery	0	0		0			0		0	
Encephalitis, acute		0			1		0			0
Enteric fever	0	0	0	0			0	0	0	
Infective enteritis or diarrhoea under 2 years	10	0	1	0	0		0	0	1	1
Influenza	15	0	1	0	1		0	1	0	1
Measles		0	0	0	0		1	0	0	2
Meningococcal infection		0	0				0	0		
Pneumonia	376	30	13	8	12		40	15	7	13
Poliomyelitis, acute	2	0		0	0		0			0
Scarlet fever		0	0	0	0		0	0	0	0
Tuberculosis:										
Respiratory	76	4	4	3	7		3	5	2	
Non-respiratory		1	0	0	1		1	0	1	
Whooping-cough	1	0	0		0		0	0	0	0
Deaths 0–1 year	313	31	24	3	16		33	22	11	13
Deaths (excluding stillbirths)	8,721	678	559	109	163		718	562	103	183
LIVE BIRTHS	15,142	1193	1031	237	409		1256	990	234	483
STILLBIRTHS	313	27	25				42	24		

* Measles not notifiable in Scotland, whence returns are approximate.
† Includes primary and influenzal pneumonia.
§ Includes puerperal pyrexia.

Medical News

Royal Dental Hospital and School.—On June 3 THE QUEEN opened a new extension to the Royal Dental Hospital of London School of Dental Surgery on what was formerly the site of Ciro's Club in Orange Street. This ceremony marked the beginning of the centenary celebrations of the hospital and school (see p. 1351). The Queen visited first the hospital, where LORD INGLEBY presented Mr. C. BOWDLER HENRY, the chairman of the board of governors and senior surgeon, and Mr. H. L. HARDWICK, the dean of the school. After a tour of the hospital departments the Queen went to Orange Street, where she unveiled a commemorative tablet in the school's new extension, inspected the building, and took tea in the new library with the assembled guests. The extension comprises a lecture theatre for 70, teaching and research laboratories and animal rooms, the library, a students' common room, and offices.

Radioactive Steroids for Research.—Small amounts of steroids labelled with tritium (^3H) are offered to suitably qualified medical research workers through the generosity of the National Research Development Corporation, the Middlesex Hospital Medical School, and the Medical Research Council. The steroids available, each with a specific activity of 1–3 $\mu C/\mu g.$, are progesterone, corticosterone, aldosterone, cortisol, aldosterone 18–21 diacetate, cortisol 21 monoacetate, and corticosterone 21 monoacetate. Workers wishing to use these compounds should apply for further details to Dr. M. GORRILL, Medical Research Council, 38, Old Queen Street, London, S.W.1.

Royal College of Obstetricians and Gynaecologists.—At a meeting of the council of the Royal College of Obstetricians and Gynaecologists on May 31 the following were elected to statutory vacancies on the College's council: *As Representatives of the Fellows.*—London, Mr. J. H. PEEL; England and Wales, Professor T. N. A. JEFFCOATE and Mr. R. NEWTON; Northern Ireland and Eire, Professor J. F. CUNNINGHAM. *As Representatives of the Members.*—England and Wales, Mr. S. D. LOXTON; Northern Ireland and Eire, Mr. J. G. GALLAGHER.

The following were admitted to the fellowship:

J. Bamforth, J. E. Bottomley, A. Buchan, E. W. C. Buckell, T. St. V. Buss, T. R. Clarke, A. G. Cumming, A. L. Deacon, A. M. Dickins, J. R. Dickinson, G. W. Garland, E. D. Y. Grasby, F. R. Heighway, A. F. Hobson, R. H. Horner, U. M. Lister, E. A. N. Macknight, E. M. Mills, A. A. Moncrieff, C. Mukerjee, P. D. Rajaratnam, E. R. Rees, H. Renton, E. ap I. Rosser, J. K. Russell, A. Sinnatamby, R. B. C. Stevenson, D. B. Stewart, and A. H. C. Walker.

The following were admitted to the membership:

V. Balachandran, B. Banerji, S. K. Basu, F. X. Bencini, O. Bolitho, R. T. Booth, C. A. Braga, A. F. Bushby, A. S. F. Butcher, D. P. Das, F. J. de Maria, R. E. ff. Devitt, P. H. Drake, I. M. Duthie, M. G. Eldridge, D. V. I. Fairweather, F. G. Feinstein, N. K. Ghose, P. R. G. Gordon, H. M. Gough, J. L. Hanington, G. H. Harris, J. C. Hartgill, C. H. Hodge, H. E. Hughes, A. H. John, S. Khanna, H. Kramer, D. K. C. Kwan, C. N. R. Loveys, D. J. Mackay, P. C. Mackay, G. G. Matthews, R. J. Mitchell, S. Mitra, A. K. Mukherjee, K. D. Mullen, G. Muttuthamby, B. Needham, J. M. North, J. North, O. K. Ogan, W. H. Patterson, P. A. Rachow, K. Sankari, R. P. Shearman, B. Shieff, M. K. Si, D. Singh, M. L. Smith, I. H. F. Swain, M. A. T. Tolley, R. D. Upton, B. C. Uys, A. J. Van Amerongen, J. A. Verzin, D. W. Warrell, and J. Willocks.

Society of Medical Officers of Health.—Dr. J. A. STIRLING, M.O.H. and school medical officer of the Borough of Chesterfield, has been elected president of the Society of Medical Officers of Health for the 1958–9 session. Dr. H. D. CHALKE, his predecessor as president, will become chairman of the Society's council in succession to Dr. C. METCALFE BROWN.

Memorial to Lord Horder.—The BISHOP OF ST. EDMUNDSBURY AND IPSWICH on Friday last week dedicated at the Golders Green Crematorium a garden in memory of the late LORD HORDER OF ASHFORD. The garden is beautifully situated in Wild Hatch adjoining the Golders Green Crematorium Garden of Rest, and there can be few memorials which would have pleased Lord Horder more than this. He was for many years a director of the London Cremation Company, and his garden at Ashford Chace is one of the beauty spots in Hampshire.

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"Ars Medica."—This is the title of a travelling exhibition of medical prints from the Philadelphia Museum of Art now on view in London. The collection is presented here by Messrs. Smith Kline and French Laboratories Ltd., who also provided the grant enabling the museum to assemble the prints. The purpose of the collection is to portray the essentials of medical iconography through the ages, and among the artists whose work is represented are Rembrandt, Goya, Pieter Brueghel, Hogarth, Daumier, Rowlandson, and Toulouse-Lautrec. The exhibition will be on view this month at the Royal Society of Medicine (June 2–6), the Royal College of Surgeons (June 9–11), the London Clinic (June 15–18), the Westminster Medical School (June 18–20), and St. Mary's Medical School (June 24–26).

Wellcome Therapeutic Research Division.—Dr. R. S. F. HENNESSEY has been appointed to the new post of head of the Wellcome Foundation's therapeutic research division. Dr. Hennessey has been in charge of the Wellcome Laboratories of Tropical Medicine since 1956. He was previously D.M.S., Uganda. Dr. L. G. GOODWIN succeeds as head of the Wellcome Laboratories of Tropical Medicine.

Milk Inquiry Committee.—The MINISTER OF AGRICULTURE, FISHERIES, AND FOOD has set up a committee to consider the composition of dairy milk in Britain, from the standpoint of both human nutrition and animal husbandry. The committee's chairman is Dr. J. W. COOK, F.R.S., Vice-Chancellor of Exeter University. The medical members of the committee are Dr. D. P. CUTHBERTSON, Dr. P. R. EVANS, Dr. H. E. MAGEE, and Professor B. S. PLATT.

Government Research.—The LORD PRESIDENT OF THE COUNCIL has appointed a committee, of which Sir SOLLY ZUCKERMAN, F.R.S., is the only medical member, to inquire into the management of Government-sponsored scientific research. The committee's terms of reference cover research in Government departments and other bodies wholly financed by the Exchequer, and also research and development carried out on their behalf elsewhere.

Metric System.—The British Association for the Advancement of Science has set up a study group under Sir HUGH BEAVER to report on the practicability, consequences, and cost of changing to the metric system in Britain. The group are expected to report in about 18 months' time.

Liverpool University.—Dr. T. WILSON, director of the Institute for Medical Research, Kuala Lumpur, has been appointed a senior lecturer in tropical hygiene from April 1 next year.

King Edward's Hospital Fund.—Mr. W. E. HALL has succeeded Captain J. E. STONE as director of the Fund's division of hospital facilities. Captain Stone joined the staff of the Fund in 1939.

Dr. J. M. Greenaway, of Sydney University, has been appointed to a Roussel fellowship at King's College Hospital Medical School.

COMING EVENTS

Family Planning Association.—Annual general meeting, June 7 at 10 a.m., Assembly Hall, Church House, Westminster, S.W.1. Sir RUSSELL BRAIN will address the meeting.

Horder Memorial Lecture.—The British Spas Federation's third Horder memorial lecture will be delivered by Dr. HOWARD A. RUSK on June 10 at 6 p.m. at the Royal Society of Medicine, London. Tickets may be obtained from the hon. secretary, British Spas Federation, 14, Stanhope Gardens, Highgate, London, N.6.

Sir John Struthers Lecture.—Professor G. A. G. MITCHELL will lecture at the Royal College of Surgeons of Edinburgh on June 11 at 3.30 p.m. His subject will be "The Innervation of Blood Vessels."

Sir Thomas and Lady Edith Dixon Lecture.—Dr. HOWARD A. RUSK will lecture at the Institute of Clinical Science, Grosvenor Road, Belfast, on June 13 at 4.30 p.m. His subject will be "Dynamic Therapeutics in Chronic Disease."

Faculty of Radiologists.—Annual meeting, June 13 and 14 in London. Details from the secretary to the Faculty, 47, Lincoln's Inn Fields, London, W.C.2.

Symposium on Clinical Endocrinology.—The Postgraduate Medical School of London is holding a symposium on clinical endocrinology for 30 consultant physicians from July 7 to 11 inclusive. The fee is seven guineas. Further details are given at p. 62 of the advertisements. Early application should be made to the dean, Postgraduate Medical School of London, Du Cane Road, London, W.12.

SOCIETIES AND LECTURES

A fee is charged or a ticket is required for attending lectures marked ●. Application should be made first to the institution concerned.

Monday, June 9

●INSTITUTE OF OBSTETRICS AND GYNAECOLOGY.—At Queen Charlotte's Hospital, 3 p.m., Professor J. L. Wright (Otago): Breech Delivery.

KING'S COLLEGE, Strand, London, W.C.—5.15 p.m., Halliburton Lecture by Professor Yngve Zotterman, M.D. (Stockholm Veterinary College): Sensory Functions of the Skin.

LONDON UNIVERSITY.—At London Hospital Medical College, 5.30 p.m., special university lecture in pharmacology by Professor Adrien Albert (Australia): Chemical Aspects of Selective Toxicity.

Tuesday, June 10

BIRMINGHAM MEDICAL INSTITUTE: SECTION OF PSYCHIATRY.—Clinical meeting at Powick Hospital, near Worcester. 4.30 p.m., tour of hospital; 6.30 p.m., discussion.

INSTITUTE OF DERMATOLOGY.—5.30 p.m., Dr. I. A. Magnus: Urticaria.

●INSTITUTE OF OBSTETRICS AND GYNAECOLOGY.—At Hammersmith Hospital, 3 p.m., Professor J. L. Wright (Otago): Vaginal Hysterectomy.

KING'S COLLEGE, Strand, London, W.C.—5.15 p.m., Halliburton Lecture by Professor Yngve Zotterman, M.D. (Stockholm Veterinary College): The Nervous Mechanism of Taste.

POSTGRADUATE MEDICAL SCHOOL OF LONDON.—4 p.m., Dr. E. J. Zaimis: Evaluation of Ganglionic Blocking Drugs.

ROYAL COLLEGE OF PHYSICIANS OF LONDON.—5 p.m., Ernestine Henry Lecture by Dr. J. N. Morris: Coronary Heart Disease and Occupation.

Wednesday, June 11

INSTITUTE OF DERMATOLOGY.—5.30 p.m., Dr. H. Haber: Dyskeratoses.

INSTITUTE OF DISEASES OF THE CHEST.—5 p.m., Mr. N. R. Barrett: Idiopathic Mediastinal Fibrosis.

●INSTITUTE OF OBSTETRICS AND GYNAECOLOGY.—At Chelsea Hospital for Women, 3 p.m., Professor J. L. Wright (Otago): Enterocoele.

OXFORD UNIVERSITY.—At Radcliffe Infirmary, 5 p.m., Litchfield Lecture by Professor John Browne: Some Studies on Adrenal Cortical Function.

POSTGRADUATE MEDICAL SCHOOL OF LONDON.—2 p.m., Professor L. P. Garrod: Recent Developments in Antibiotic Therapy.

ROYAL COLLEGE OF SURGEONS OF EDINBURGH.—3.30 p.m., 10th Sir John Struthers Lecture by Professor G. A. G. Mitchell: The Innervation of Blood Vessels.

Thursday, June 12

GLASGOW UNIVERSITY AND ROYAL FACULTY OF PHYSICIANS AND SURGEONS OF GLASGOW.—At Royal Faculty of Physicians and Surgeons, 3 p.m., conference on obstetrics and gynaecology. Professor D. F. Anderson, Dr. A. M. Sutherland, and Dr. E. G. Oastler: Amenorrhoea.

INSTITUTE OF DERMATOLOGY.—5.30 p.m., Dr. A. Tickner: Serum Protein Patterns in Skin Disease.

●INSTITUTE OF OBSTETRICS AND GYNAECOLOGY.—At Queen Charlotte's Hospital, 3 p.m., Mr. C. K. Vartan: Hypertension in Pregnancy and Pre-eclampsia.

LONDON ASSOCIATION OF THE MEDICAL WOMEN'S FEDERATION.—At Zoological Gardens, Regent's Park, 5.30 p.m., visit to the Hospital Section of the Zoological Gardens.

NUFFIELD ORTHOPAEDIC CENTRE.—At Wingfield-Morris Orthopaedic Hospital, 8.30 p.m., Mr. A. J. Helfet: Mechanism, Diagnosis, and Effects of Derangement of the Medial Meniscus of the Knee.

POSTGRADUATE MEDICAL SCHOOL OF LONDON.—4 p.m., Dr. H. de Wardener: Polyuria.

ROYAL MEDICO-PSYCHOLOGICAL ASSOCIATION: PSYCHOTHERAPY AND SOCIAL PSYCHIATRY SECTION.—At 11, Chandos Street, W., 8 p.m., Dr. S. T. Hayward: On Being Ill in a Mental Hospital.

ST. GEORGE'S HOSPITAL MEDICAL SCHOOL.—5 p.m., Sir Paul Mallinson: postgraduate demonstration in psychiatry.

Friday, June 13

●INSTITUTE OF DERMATOLOGY.—5.30 p.m., Dr. P. F. Borrie: clinical demonstration.

INSTITUTE OF DISEASES OF THE CHEST.—5 p.m., Dr. J. G. Scadding: clinical demonstration.

POSTGRADUATE MEDICAL SCHOOL OF LONDON.—10 a.m., Sir Ralph Marnham: Management of Diverticulitis.

ROYAL VICTORIA HOSPITAL, BELFAST.—At Institute of Clinical Science, Grosvenor Road, Belfast, 4.30 p.m., Sir Thomas and Lady Edith Dixon Lecture by Professor H. A. Rusk (New York): Dynamic Therapeutics in Chronic Disease (methods to help the disabled).

ST. MARY'S HOSPITAL MEDICAL SCHOOL.—At Wright-Fleming Institute Theatre, 5 p.m., Mr. Aleck Bourne: Non-Malignant Cervix.

●SOCIETY OF MEDICAL OFFICERS OF HEALTH: TEACHING GROUP.—At Ciba Foundation, 2 p.m., opening remarks by Professor C. Fraser Brockington. 2.15 p.m., Professor T. McKeown and Dr. J. M. Mackintosh: Future of the Medical Services and its Implications for the Teaching of Social Medicine. 4.45 p.m., subject: The Content of Social Medicine—(*a*) Dr. C. W. Dixon: For the Medical Student; (*b*) Dr. J. B. M. Davies: For the Diploma in Public Health. 8 p.m., Professor A. Mair and Dr. J. Burton: Teaching Methods.

Saturday, June 14

●SOCIETY OF MEDICAL OFFICERS OF HEALTH: TEACHING GROUP.—At Ciba Foundation, 9.30 a.m., annual general meeting. 11 a.m., discussion to be opened by Professor W. S. Walton. 2 p.m., general discussion.

APPOINTMENTS

LIVERPOOL REGIONAL HOSPITAL BOARD.—D. M. Zausmer, M.B., B.S., D.P.M., Consultant in Child Psychiatry (whole-time or on maximum part-time sessions) in Birkenhead, Wirral, and Chester areas; R. B. McConnell, M.D., M.R.C.P., Part-time Consultant Physician at Broadgreen Hospital; T. R. Littler, M.D., M.R.C.P., Part-time Consultant Physician at Victoria Central Hospital, Wallasey; J. D. E. Edwards, M.B., Ch.B., D.O.M.S., Part-time Assistant Ophthalmologist at Victoria Central Hospital, Wallasey.

BIRTHS, MARRIAGES, AND DEATHS

BIRTHS

Adderley.—On May 29, 1958, to Jean and David Adderley, of 66, Boyne Road, London, S.E. (91, Belmont Hill, London, S.E., from June 28, 1958), a brother for Nicholas, Martin, and Ruth—Simon Robert.

Falconer.—On May 26, 1958, to Jennifer (formerly Fowles), M.B., Ch.B., D.Obst.R.C.O.G., wife of W. J. Falconer, M.B., Ch.B., D.Obst.R.C.O.G., of Manle Road, Brooklands, Manchester, a son.

Preston.—On May 26, 1958, at the Norfolk and Norwich Hospital, to Mollie (formerly Shaw), wife of Dr. W. E. B. Preston, of Norwich, a daughter—Jennifer Shirley.

Williams.—On May 21, 1958, at Wanstead Hospital, London, E., to Enid, wife of Dr. Fraser Williams, a brother for Gweno—John Fraser.

DEATHS

Armstrong.—On May 14, 1958, at Lindis, Colemans Stairs Road, Birchington, Kent, Basil William Armstrong, O.B.E., *M.C.*, M.B., B.S., formerly of Margate, Kent, aged 68.

Bateman.—On May 11, 1958, in London, William Hirst Bateman, M.B., Ch.B., J.P., of Great Eddy, Keswick, Cumberland, aged 83.

Bown.—On May 11, 1958, in a nursing-home, Sidney Herbert Bown, M.D., formerly of 40, Argyll Road, London, W., aged 87.

Kusel.—On May 11, 1958, Wilhelm Rudolf Kusel, M.R.C.S., L.R.C.P., of 103, Vassall Road, London, S.W.

Loughnan.—On May 12, 1958, at The Park View Hotel, Rickmansworth, Herts, Gilbert Mather Loughnan, L.R.C.P.&S.I. & L.M., late of Hanley, Staffs, aged 76.

McMichael.—On May 11, 1958, at his home, Oxford, Gerald Joseph Wyld McMichael, M.B., B.S., D.P.H.

Williams.—On May 15, 1958, at her home, 25, Forest Road, Claughton, Birkenhead, Cheshire, Anna May Williams, M.B., Ch.B., D.P.H.

Any Questions ?

We publish below a selection of those questions and answers which seem of general interest. It is regretted that it is not possible to supply answers to all questions submitted.

Tests of Respiratory Function

Q.—*Could you please give a short account of the tests of respiratory function?*

A.—Many of these tests are still under development in research centres and it is not possible to describe them briefly. However, a number are fully established and are useful, and simple enough, for routine clinical use. There are two main groups of tests: (1) those of ventilation, designed to measure the maximum amount of air that the lungs, acting like bellows, can drive in and out per minute, and to determine by what mechanism this maximum ventilation, which is the breathing reserve for exercise, may be reduced: (2) those of gas exchange, designed to follow the processes by which air is distributed in relation to the distribution of blood in the lungs, so as to permit gas exchange between the two by diffusion. Tests from each group are really necessary for the full evaluation of a patient's function. Those from the first are generally simpler and most widely used.

The common tests are: *Group 1.* (a) Maximum breathing capacity, measured either directly by collecting the gas exhaled over a short period of time during voluntary maximum hyperventilation or indirectly from the volume of gas exhaled during the first second of single, rapid, forced expiration into a suitable spirometer; (b) the measurement of the "compliance" of the lungs (volume change per unit change of intrathoracic pressure) and of the airways resistance, using the intra-oesophageal pressure as a measure of intrapleural pressure and a suitable air-flow meter; (c) measurement of the total volume of the lungs, and their subdivisions, by closed-circuit spirometry and gas dilution. *Group 2.* (a) Measurement of the amount of inequality of gas-distribution to different regions of the lungs: this needs a rapidly responding automatic gas-analyser—for example, a spectrophotometric nitrogen-meter; (b) estimation of the balance between blood and gas distribution within the lungs, usually determined indirectly from measurements of gas tensions in arterial blood; (c) measurement of the diffusing capacity (the amount of gas taken up per unit pressure difference between alveoli and blood), usually done by measuring the rate of uptake of carbon monoxide.

Of these tests the indirect measurement of maximum breathing capacity (from a single forced expiration) is that most commonly used, often in conjunction with arterial blood-gas analysis, a simple exercise test, and carbon monoxide diffusing capacity as a guide to the efficiency of gas exchange. The inquirer is referred to the excellent book by Comroe and others[1] for details of the tests and their physiological basis, to the paper by Franklin and others[2] for an account of the value of a tracing of a single forced expiration, and to the paper by Hugh-Jones[3] for a summary of the tests.

REFERENCES

1 Comroe, J. H., Forster, R. E., Dubois, A. B., Briscoe, W. A., and Carlsen, E., *The Lung*, 1955. Year Book Pub. Inc., Chicago.
2 Franklin, W., Michelson, A. L., Lowell, F. C., and Schiller, I. W., *New Engl. J. Med.*, 1955, **253**, 799.
3 Hugh-Jones, P., *Brit. J. Anaesth.*, 1958, **30**, 107.

Reaction to Local Analgesia

Q.—*Why should a child develop violent headache and drowsiness and sleep for 15 hours after local analgesia for dental extraction?*

A.—Some patients develop a toxic response to analgesics even with ordinary dosage. Such toxic reactions affect the central nervous system and the vascular system. The effect on the nervous system is usually one of excitement going on to convulsions and followed by drowsiness and coma, but the excitement and convulsions may be absent, especially with lignocaine, a comparatively recent and popular preparation. A patient's intolerance is not of necessity similar for all local analgesics, for their chemical formulae fall into different groups. Reappraisal of the dose and preparation used could be considered, but the preparation and dosage previously used should not be repeated.

Essential Fatty Acids

Q.—*What are the essential fatty acids, and in which foods are they chiefly found?*

A.—The term is applied to certain unsaturated fatty acids, particularly linoleic and linolenic, which have been found to be essential for the health of experimental animals. Singly unsaturated acids, such as oleic, can be made by the animals, but doubly and trebly unsaturated acids must be derived from the diet. In the absence of essential fatty acids rats develop typical scaly tails, and their skins become unduly permeable to the passage of water. Essential fatty acids are most plentiful in various vegetable oils, such as maize, cottonseed, and peanut oils, but they are also widely distributed in cereals, green vegetables, nuts, and various animal fats, including lard. There is little evidence that deficiency of essential fatty acids affects the human subject, but it has been claimed in Germany that lard may be highly effective in treating skin abnormalities in children. Vegetable oils, and particularly maize oil, have been found, when eaten by human subjects in large quantities, to depress the level of cholesterol in blood, and their use in the treatment of coronary disease has been advocated.

Treatment of Histoplasmosis

Q.—*Is there any effective treatment for histoplasmosis?*

A.—The prognosis in cases of histoplasmosis is poor, but nystatin may be tried. This antibiotic is unique in having powerful antifungal activity and it has been shown to be active *in vitro* against *Histoplasma capsulatum*. A dosage of 500 mg. two to four times daily for one week might be employed. Christie *et al.*[1] have reported favourably on the use of ethyl vanillate (not to be confused with ethyl vanillin, the flavouring agent) in this infection. This substance, however, is toxic and may produce skin rashes and drug fever, and in animals has caused intestinal haemorrhages and renal and myocardial degeneration. A blood level of the drug of 17–35 mg. per 100 ml. should be aimed at and maintained for six to eight weeks. Oral doses necessary to maintain this blood level are 0.5 to 3.5 g. per kg. body weight and are administered as a 40% solution in olive oil, but unless facilities for controlling the level are available it is doubtful whether the drug should be employed. Sulphadiazine in doses of 3 to 6 g. daily has been favourably reported on in some cases, as also have aromatic diamides.

REFERENCE

1 Christie, A., Middleton, J. G., Peterson, J. C., and McVickar, D. L., *Pediatrics*, 1951, **7**, 7.

Thin and Greasy Hair

Q.—*How should thinness of hair accompanied by excessive greasiness of scalp in a youth be treated?*

A.—Thinning of the scalp hair is presumed to be an early degree of canities and in that case probably affects mainly the vertex and frontal region. It is probably not possible to regrow hair which has already been lost nor to arrest completely a further progressive loss of hair. However, it may be possible with treatment to delay the progress of hair loss, and of the various methods massage may be the most important. In this case it should not be carried out with the tips of the fingers, since by so doing the patient may even make his baldness worse. Instead, the flat of

the hand should be put on each parietal region and the whole scalp moved over the underlying cranium. This should be carried out once or twice daily for five or ten minutes. The value of stimulating lotions is more doubtful. "Vibro" massage and other methods carried out by hairdressers are not necessarily ineffective, but are probably no better than the massage already mentioned. Greasiness of the scalp may be controlled by frequent washing with soap and water and the daily application of a lotion such as the following: chloral hydrate 2 parts; salicylic acid 3 parts; castor oil 3 parts; industrial spirit to 100.

Prednisone in Temporal Arteritis

Q.—*How should dosage of prednisone and length of treatment be judged in temporal arteritis?*

A.—In principle the dosage of prednisone should be the smallest that will control the patient's symptoms when the drug is gradually stopped. Often it is necessary to start with 15–20 mg. prednisone to control the pain, reduce the constitutional disturbances, and bring the temperature to normal. The prednisone should then be gradually reduced to the least amount that will control the symptoms and pyrexia. Usually, but not always, the E.S.R. will return to normal. After a month or so it is often possible to stop the prednisone gradually without any recurrence of symptoms. The clinical condition should be watched carefully. It is better to treat the symptoms rather than the sedimentation rate.

Hair on the Forehead

Q.—*What is the best method of removing permanently hair growing low on the forehead in a young woman?*

A.—Whatever its situation there is only one method of permanently removing hair which can be recommended. This is the destruction of the hair follicle by electrolysis or diathermy. On the lips and chin the results are fairly good, but some degree of scarring is difficult to avoid. On the forehead, where the skin is smoothly stretched over the frontal bones, any degree of scarring would probably be more conspicuous and it is very doubtful whether permanent epilation can be achieved without noticeable scarring.

Swayback and Disseminated Sclerosis

Q.—*It was reported*[1] *in 1947 that some research workers investigating swayback in sheep had developed signs and symptoms indistinguishable from disseminated sclerosis. Has this been followed up?*

A.—In view of this association an attempt was made some years ago from the Oxford Neurological Department to investigate the geographical distribution of disseminated sclerosis in this country, and also to treat the disease with copper salts. Both these lines of research proved difficult, and as the early findings were not very encouraging they were given up, and the work done was not published.

REFERENCE

1 Campbell, A. M. G., Daniel, D., Porter, R. J., Russell, W. Ritchie, Smith, H. V., and Innes, J. R. M., *Brain*, 1947, **70**, 59.

NOTES AND COMMENTS

Aetiology of Chronic Alcoholism.—Dr. B. M. MERRIMAN (London, S.W.1) writes: In the answer to the question concerning the aetiology of chronic alcoholism ("Any Questions?" April 26, p. 1015) reference is made to the work of Lemere and his colleagues in the United States, who found that 62.4% of 500 alcoholic cases had a positive family history of alcoholism (while in 200 cases of moderate drinkers 16% was the corresponding ratio). The statement is made that in non-symptomatic cases a genetic factor may appear to be operating, but a possible alternative explanation might be afforded by sensitization of the nervous system *in utero* of those cases where the mother was an alcoholic. May it not be possible that the growing foetus of a mother who habitually consumes alcohol during pregnancy becomes sensitized to alcohol *in utero* by the disruption of the enzyme systems in the brain and the consequent disturbance of glucose metabolism, with the result that the child when born more readily reverts to the disrupted metabolic pattern if alcohol is taken in later life? This would, of course, only account for the development of alcoholism in the child of an alcoholic mother, but it might be an explanation of some cases and would reinforce the need for increased administration of vitamin B complex during pregnancy.

Alcohol withdrawal symptoms are difficult to detect in the newborn infant, but symptoms of heroin withdrawal, being considerably more pronounced, are obvious. It is known that in the newborn infants of women with heroin addiction withdrawal symptoms occur in the form of tremor of the limbs which occurs within 6 to 18 hours of delivery followed by vomiting, difficulty in respiration, and cyanosis, which may be so severe as to endanger the infant's life and require treatment with methadone if it is to survive (detailed information is available in a paper by Krause and his colleagues[1]). If heroin addiction in the mother produces such an effect in the newborn child, it is surely reasonable to assume that alcohol ingestion by the mother during pregnancy is not without effect. While it is difficult to prove sensitization to alcohol *in utero*, it would seem desirable to restrict the alcohol consumption of pregnant women as far as possible in all cases where there is a likelihood of this being taken in significant quantities. In those cases where doubt arises on this point it would surely be a wise precaution to administer vitamin B complex during the pregnancy. It might be desirable also to administer vitamin B complex to the infant for some while after birth.

Doubtless the main reason for the development of alcoholism in patients with a positive family history is that they are exposed in the home to the example of an alcoholic parent or parents, and are therefore more likely psychologically to resort to alcohol in times of stress. This would explain the majority of cases. But it is possible that sensitization *in utero* might explain the onset in a certain proportion of patients, who might be prevented from subsequently becoming alcoholics, by vitamin B complex administration at the appropriate time.

OUR EXPERT replies: Dr. Merriman's statement that non-symptomatic cases might be explained by "sensitization of the central nervous system of the foetus *in utero*," even if true, could only explain a small proportion of cases, since the incidence of chronic alcoholism in women is very considerably less than in men. His view that alcoholism in patients with a positive family history is due to exposure to the alcoholic habits of their parents, which they have subsequently copied, is no doubt true of a proportion of cases. It fails to explain, however, the many cases in which alcoholism only appears in alternate generations: the children of the alcoholic, having experienced suffering and unhappiness caused by alcoholism, themselves eschew drink, but their children, unaware of the danger, resort to normal drinking which deteriorates into alcoholism.

REFERENCES

1 Krause, S. O., Murray, P. M., Holmes, J. B., and Burch, R. E., *Amer. J. Obstet. Gynec.*, 1958, **75**, 754.

Collected Articles from the "British Medical Journal"

The following books are available through booksellers or from the Publishing Manager, B.M.A. House. Prices, which include postage, are now the same for both inland and overseas.

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Refresher Course for General Practitioners, Volumes 2 and 3 (26s. 9d.).

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